

**Sanitation Realities in Peri-Urban Communities:
Unfreedoms, Capabilities and the Conscious Mind
- A Case of Chennai, India**

Ulrike Shiuan-Horng Erica IMMLER

Submitted for the Degree of

Doctor of Philosophy

Faculty of Social Sciences

University of Bradford

2018

Ulrike Shiuan-Horng Erica Immler

Sanitation Realities in Peri-Urban Communities: Unfreedoms, Capabilities and the Conscious Mind - A Case of Chennai, India

Key words: sanitation, peri-urban communities, capabilities, conscious mind, inclusive city, marginalized settlers

Abstract

This thesis assesses sanitation realities experienced by peri-urban slum dwellers in Chennai, India, to investigate whether rapid economic growth translates into pervasive safe sanitation, otherwise a threat to human security. This is in line with the Sustainable Development Goals of 'leaving no one behind'. The empirical methodology consists of qualitative comparative case studies approached through rapid appraisal. At least 5 interviews at each of the 10 different slum settlement locations within the Chennai Metropolitan area were conducted. Both the locations and the settlers were conveniently sampled. The settlements were chosen as they mostly lay in a rapidly urbanizing area. The selection of interviewee was determined by availability, yet leaning towards women who are more vulnerable when lacking safe sanitation facilities, and who are the primary caregivers in the household. The research found that out of the 10 settlements visited, 5 habitually practiced open defecation, as no sanitation facilities were available. Hence some settlers were restricted in their freedom to be safe from emotional or physical harm: threatened by dangerous pathogens released into the environment, and insecurities due to lack of privacy. Conceptually the thesis applies an understanding of how affecting influences in individual history and living environment impact upon an individual's conscious mind, connecting the capability approach to consciousness research. The thesis argues how settlers, overlooked by public services, and subjected to the dangerous and humiliating practice of open defecation, are faced with mental health issues and a diminished likelihood to productively engage, and exercise agency for human growth.

Acknowledgements

My principal supervisor, Dr P.B. Anand, has been instrumental in inspiring, facilitating and guiding this research thesis and I could not have wished for a better intellectual and human role model, I am infinitely grateful. I credit him (and the teachings of Amartya Sen) for what I like to call intelligent altruism: a behavioural guideline for the context of social multitudes.

I am deeply grateful to Dr Shailaja Fennell and Dr David Harris for the pleasant viva experience and the constructive suggestions to improve the thesis.

My associate supervisor, Prof Behrooz Morvaridi, has been a trusted and reliable support from my beginnings as an MA student and I sincerely thank him for his input, encouragement, and the collegial friendship along all the way.

Having affiliation to IITM for the time of my field study trips was invaluable and I am extremely grateful to Prof Sudhir Chella Rajan for his kind assistance in this regard, as well as to Dr Solomon Benjamin who acted as my guide for the time.

I am significantly indebted to my local Tamil guides in Chennai, who helped me navigate this unfamiliar terrain and who assisted me in speaking to the settlers interviewed: Sujatha, Abhinand, Monish and Senthil.

My gratitude also goes to Michele and Sandra at UoB for their invaluable and efficient support giving the administrative part of the PhD process a very friendly face.

I am truly grateful to my friend Sylvie, who in 2017 successfully completed her own doctoral research, for critical encouragement, comments, and for being a fabulous ally in what I like to call “academic sisterhood”.

The exposure to cultural pluralism as is the case in the research community of PSID and the University of Bradford is something I deeply value, and I am profoundly grateful for the social learning and exchange with my colleagues: Ronak, Laura, Julia, Sarah, Dominic, Pamela, Victoria, Yagmur, Silvia, Adebiyi, Max ... and especially with the present A-team: Caroline, Serag, Chioma, Maria, Gilbert... and past: Nadia, Eko and Waheed. Meeting you has enriched me immensely!

Lastly I need to acknowledge the Cecil Castle: Mark, Niall, Chris, Joanna (others are already mentioned) for giving me, Silver-Lining and Paka-Nzuri a safe space to call home.

Dedication

To my family,

for unfailing love, support, patience and encouraging nudges

To the slum settlers I had the honour to meet and speak to, who may be living on the margins of society, but are very centre stage in this thesis.

Table of Contents

Abstract	i
Acknowledgements	ii
Dedication.....	iii
List of Figures:	vi
List of Tables:.....	vi
Abbreviations:	vii
Fieldwork Data Referencing Abbreviations:	viii
1. INTRODUCTION	1
1.1 Background.....	2
1.2 Research Questions and Objectives.....	6
1.3 Structure of the Thesis.....	7
2. CAPABILITIES, IDENTITY AND SANITATION	9
2.1 On Consciousness and Survival, Being and Doing.....	9
2.1.1 Technologies of Extending the Self	11
2.1.2 Gender, Identity and Capabilities	23
2.1.3 Agency - Concepts by Giddens and Sen.....	31
2.2 Development Focus on Sanitation	36
2.2.1 Recent Practice of Development Interventions for Sanitation.....	37
2.2.2 Community Led Total Sanitation - Approach in Practice	41
2.2.3 Hygiene Awareness.....	43
2.2.4 Technicalities of Sanitation	43
2.2.5 Technicalities of Sanitation Projects	46
2.3 Chapter Conclusion.....	49
3. METHODOLOGY	51
3.1 Philosophical Considerations	52
3.1.1 Ontology	53
3.1.2 Epistemology	54
3.1.3 Research Philosophy.....	58
3.2 Research Methods and Approach.....	58
3.2.1 Methods Employed.....	58
3.2.2 Scope of Fieldwork	59
3.2.3 Data-Gathering Approach.....	61
3.2.4 Reflections on the Fieldwork	62
3.2.5 Ethical Considerations.....	64
3.2.6 Research Questions Revisited	67
3.3 Conclusion	68
4. SANITATION REALITIES IN AN INDIAN PERI-URBAN CONTEXT: CHENNAI METROPOLITAN AREA.....	69

4.1. Sanitation Projects in Rural and Urban India	70
4.2 Field Study Context Findings	79
4.2.1 Open Defecation within the Greater Chennai Region.....	82
4.2.2 Use of Public Toilets.....	94
4.2.3 Shared and Private Toilets	100
4.2.4 Discussion	104
4.2.5 Conclusion.....	106
4.3 Valuing Freedoms for Human Waste Disposal	107
4.3.1 Introduction.....	107
4.3.2 Importance of Access to a Toilet	108
4.3.3 Assessment of Freedoms when Open Defecation is the Norm ..	111
4.3.4 Concluding remarks.....	146
5. CONSCIOUS MIND, BEHAVIOUR AND PUBLIC POLICY	148
5.1 Introduction.....	148
Research Intent	149
5.2 Discussing Behaviour and Consciousness	150
5.2.1 Models of Environmental Stimuli and Behavioural Output.....	150
5.2.2 Behavioural Economics in Context	166
5.2.3 Summary of Behaviour and Consciousness Discussion.....	172
5.3 Discussing Realized Capabilities and Wellbeing.....	173
5.3.1 Case Study Comparison - Mudichur and Perungudi Medu.....	173
5.3.2 Subjective Realities of Resettled Settlers	179
5.3.3 Structural Violence	190
5.3.4 Discussing the Possibilities and Kinds of Intervention	192
5.4 Right to Sanitation! Law for Sanitation?	197
5.5 Intelligent Altruism	199
5.6 Chapter Conclusion.....	204
6. CONCLUSION.....	205
6.1 How this Thesis Contributes to Body of Knowledge.....	205
6.2 Research Questions/ Objectives Addressed	210
6.2.1 How Research Questions Have Been Addressed	210
6.2.2 How Research Objectives Have Been Addressed	213
6.3 Way Forward for the Research.....	216
6.4 Closing Remarks	217
Bibliography	219
Appendix 1	232
Overview of places visited:	232
Appendix 2	233
Interview guide	233
Appendix 3	235
Overview table of interviewee characteristics.....	235

List of Figures:

- Figure 1: Overview Research Design. Adapted from: Saunders et al. (2009)
- Figure 2: Map of fieldwork locations. Source: adapted from Google Maps. (2017)
- Figure 3: lifeworld-agent-behaviour model. Source: Author.
- Figure 4: Conscious mind – stimulation – output model. Source: Author.
- Figure 5: Sanitation reality versus socio-political environment. Source: Author

List of Tables:

- Table 1: Overview of sanitation options at locations visited; Source: Author.
- Table 2: Fishing harbour interviewee characteristics; Source: Author.
- Table 3: Kottivakkam interviewee characteristics; Source: Author.
- Table 4: Thoraipakkam interviewee characteristics; Source: Author.
- Table 5: Sriperumbudur Roadside interviewee characteristics; Source: Author.
- Table 6: Sriperumbudur Village interviewee characteristics; Source: Author.
- Table 7: Three dimensions of sanitation in the OD settlements; Source: Author.
- Table 8: Lighthouse interviewee characteristics; Source: Author.
- Table 9: Alandur interviewee characteristics; Source: Author.
- Table 10: Madipakkam interviewee characteristics; Source: Author.
- Table 11: Perungudi interviewee characteristics; Source: Author.
- Table 12: Mudichur interviewee characteristics; Source: Author.
- Table 13: Capability Values – Thoraipakkam Settlers; Source: Author.
- Table 14: Capability Values – Fishing Harbour Settlers; Source: Author.

Table 15: Capability Values – Kottivakkam Settlers; Source: Author.

Table 16: Capability Values – Workers in the Street; Source: Author.

Table 17: Capability Values – Sriperumbudur Roadside Settlers; Source: Author.

Table 18: Capability Values – Sriperumbudur Village Settlers. Source: Author.

Abbreviations:

AT	Appropriate Technology
CA	Capability Approach
CLTS	Community Led Total Sanitation
CV	Capability Value
CMA	Chennai Metropolitan Area
CMD	Common Mental Disorders
GP	Gram Panchayat (village council)
IITM	Indian Institute for Technology Madras
IT	Information Technology
NGO	Non-Governmental Organisation
NGP	Nirmal Gram Puraskar (Award for achievement of open defecation free status and drinking water coverage)
MRTS	Mass Rapid Transit System
OD	Open Defecation
ODF	Open Defecation Free
QR	Qualitative Research
Rs	Rupee Indian currency)
SSP	Slum Sanitation Programme
SPARC	Society For the Promotion of Area Resource Centers
TB	Tuberculosis
TSC	Total Sanitation Campaign
YWCA	Young Women's Christian Association
WASH	Water, Sanitation and Hygiene

Fieldwork Data Referencing Abbreviations:

AL	Alandur settlers
C	Counsellor
FH	Fishing harbour settlers
HH	Household
KV	Kottivakkam settlers
LH	Lighthouse settlers
MA	Madipakkam settlers
MU	Mudichur settlers
PM	Perungudi (Medu) settlers
SN	Sriperumbudur Navalur village settlers
SR	Sriperumbudur Roadside settlers
TH	Thoraipakkam settlers
VA	Village administration

1. INTRODUCTION

Public health is a matter of importance to every member of the public and safe sanitation is an essential foundation thereof. Given that death and disease from unsafe sanitation is entirely preventable, but worldwide far too common, this thesis investigates circumstances in which people practice unsafe sanitation.

There are two dimensions of public illness stemming from unsafe sanitation: one are the bacterial and viral diseases spread through faecal matter, the second are psychological health issues caused by having to dispose of human waste at an unhygienic and unsafe place that likely lacks privacy. The thesis acknowledges the former but places the analytical focus on the latter: on psychological 'unfreedoms' impacting mental health.

To investigate such 'unfreedoms' the research utilizes the seminal scholarly contribution of Amartya Sen (1999) in the field of development studies/ welfare economics, the capability approach, as analytical framework. This is principally the understanding that people's behaviour is conditioned by the choices they have in their everyday lives. Allowing for a deeper analysis of a person's capability set the thesis draws on consciousness research and elaborates a conscious mind system with the research of Antonio Damasio (1999) among others. The use of behavioural economic analysis facilitates the rationale of behavioural choices.

The empirical data for this thesis was collected from settings within the peri-urban Chennai area, with the research looking at human waste management among marginalized settlers. Through analysis of the data it aims to show that physical un-freedoms lead to psychological un-wellbeing, which has the consequence of a wider threat to human security as exemplified in the context of un-safe sanitation.

1.1 Background

“World health today spotlights the paradox of unprecedented achievement among the privileged and a vast burden of preventable disease among those less privileged, the majority of humankind” (Ogata and Sen 2003: 95)

Open defecation (OD) is a major source of shame, not only for practicing individuals and communities, but also for the larger society within which the practice is taking place, as it is likely the easiest avoidable source of ill-health to humankind. Nevertheless, in 2015 there were still 892 million people practicing open defecation worldwide (WHO&UNICEF 2017), This thesis is set to explore the challenge of ending open defecation within the context of Chennai city, India.

When it comes to the overall well-being of a nation, a state, or a city, economic development may need to be comprehensively attached importance to. This can happen by ‘upgrading’ it to ‘Human development’. India’s GDP grew by 7.1% in 2016 (WorldBank 2017). According to the Policy Note of the Industries Department of the Tamil Nadu State government, “Tamil Nadu has emerged as the Second largest economy among Indian States in 2013-14” (NIE 2014). And for Chennai as the state capital it can be said that the average annual GDP per capita growth between 2000-2014 was 6.6 % (Berube et al. 2015). This shows that India, Tamil Nadu, and Chennai are on a rapid path of economic development, and it seems desirable that the economic development should match the other factors related to the human development of its population: health and education. While there might be outstanding achievements in both these aspects - India produces world class medical doctors as well as academics - the topic of sanitation and hygiene is of particular relevance as it is an incredibly basic prerequisite to safeguard human health and avoid the spread of dangerous pathogens.

The 2003 report “Human Security Now” states in the section on Economic Security that “(b)esides basic income and resources, the freedoms to enjoy basic health, basic education, shelter, physical safety, and access to clean water and clean air are vitally important” (Ogata and Sen 2003: 73). This indicates that certain factors are constitutive of economic well-being, or basic wellbeing, such as health and physical safety, which inadequate or lacking sanitation facilities pose a risk to. As it is the poorest citizens of a country or state that are the most vulnerable, this study looks at the access to sanitation and hygiene of the poor and marginalized members of the communities and assesses the extent of freedom they have to ‘enjoy’ basic sanitation and hygiene facilities.

Open defecation becomes the more hazardous, the higher the population density of the area it is practiced in. And while urban areas generally have a sewerage system, the peri-urban areas, formerly rural villages and recently urbanized, are likely not yet connected to the sewerage system, meaning that the residents there are at even higher risk of health impacts related to open defecation than in rural or urban areas (Vasundara 2012). Thus, in the light of health security, which “is the vital core of human security - and illness, disability and avoidable death are “critical pervasive threats” to human security” (Ogata and Sen 2003: 96), a study on the prevalence of open defecation in a peri-urban setting is the more important. For this, the Metropolitan area of Chennai offers an optimal research object to assess how within an environment of economic growth the basic survival requirements of the most vulnerable members of the population are tended to. Hence, the study sought to gain an insight into washroom access possibilities of settlers in the Chennai Metropolitan area (CMA), and how they cope with whatever is available to them.

Efforts to achieve sanitization of the country are not new, and the progress of it has been well documented. The comparison of latrine availability data between the years of 2001 and 2011, published in the Census of India (Chandramouli 2011), shows that in 2011 53.1% of the population in the whole of India did not have any form of latrine. Compared to

2001 (63.6%) this is somewhat of an improvement, but as open defecation is a serious public health hazard (Spears et al. 2013; Mara et al. 2010) and also the focus of the present Indian national government, who wants to end it by 2019 (The Economist 2014), studies on this topic are (still) very timely and relevant. This is especially since previous policy initiatives have not been fruitful. The 2011 Census figure for Tamil Nadu in this regard stands by 47.7%, highlighting that the 2006 introduced Total Sanitation campaign has not been successful in its objective (Vasundara 2012). Additional evidence for the urgency of sanitation improvement in Chennai is given by official reports. The Ministry of Urban Development is monitoring the recent efforts of the Indian government for a sanitization of urban areas. In the 2016 “Swachh Survekshan” report it is stated that compared to the 2014 survey Chennai has moved 33 places down in the ranking of city cleanliness in India, moving to 37th place (out of 73 cities ranked), and is now in the group that requires acceleration. The ranking in the Swachh Survekshan 2017 survey is 235th place, out of 434 cities ranked. This ranking is a poor bill of health for the capital of one of the faster growing and more economically developed states of India.

This is why the present study seeks to assess the sanitation situation of marginalized communities from a different angle, through the lens of the capability approach (Sen 1999), offering an understanding of freedoms and values of the participants. Many have drawn on Sen’s capability approach to lay out a conceptual foundation for their research. For example, in her paper on education and social justice, (Unterhalter 2003) differentiates between education as ‘schooling’ and

“education [...] thought of as part of the process of exercising agency, that is using reflection, information, understanding and the recognition of one’s right to exercise these capacities in order to formulate the ‘valued beings and doings’ entailed in the concept of capabilities”.

This definition of exercising agency in order to achieve a ‘valued doing or being’ offers the insight that firstly, education for agency is different to

education as 'schooling', and secondly, that agency in the capability approach is about realising a valued state of being (or doing) and not merely agentic acting out of reflex, necessity, or coercion. It is especially the latter insight that this study will draw on when discussing the research findings.

The thesis will further develop an understanding of the 'conscious mind system', referring to Antonio Damasio (1999) among others, to better understand human behavioural choice or the lack thereof in respect to the socio-physical environment of the individual or the 'lifeworld'.¹ The 'lifeworld' concept is adopted from Habermas's theory of communicative action. While the theory is not directly applied here, as the marginalized communities experience a lack of communication, hence the marginalization, the thesis is constructed in line with Critical Theory². This allows for an integration of the conscious mind and the capability approach. In this manner the thesis seeks to illuminate the notion of agency and restrictions to freedoms. For this, qualitative data will serve as empirical foundation³, gathered using a comparative case-study approach in slum settlements within the greater Chennai region.

The following section details the research questions and objectives.

¹ See chapter 5.2.1 (Models of environmental stimuli and behavioural output).

² See chapter 3.1.2. (Epistemology).

³ See chapter 4. (Sanitation Realities in an Indian peri-urban context: Chennai Metropolitan area).

1.2 Research Questions and Objectives

This research seeks to address the following questions:

- I. To what extent does the sanitation situation of poor households in peri – urban Chennai pose a risk to their human security and agency?**
- II. What are the dimensions of psychological and agency freedoms of the people in such contexts and their consequences?**

To address these questions this study has set out the following five objectives:

1. Explore the notion of ‘self’, identity, wellbeing and agency, in particular with regards to a ‘best practice’ approach concerning sanitation development interventions.
2. Probe into the sanitation situation of marginalized poor households to find out if there is evidence for open defecation practiced within the Greater Chennai region
3. Get a picture of the subjective experience of settlers with regards to their sanitation option available, within their socio-political lifeworld dynamics, and highlight a multitude of realities.
4. Examine the relationship between behaviour, consciousness, and mental endowments
5. Explore what kind of sanitation development intervention would fit the subjective realities of people on the ground

How these objectives have been addressed will be indicated in the Structure of the thesis section below.

1.3 Structure of the Thesis

The research thesis consists of six chapters, including the present one, which seeks to give an indication about the research background, lists the research questions and objectives, and states the structure of the thesis.

Chapter 2 has two parts. This is because the study seeks to combine development research with insights from cognitive sciences. The first strand of literature is grouped around the notion of the ‘self’ which is precursory to the discussion on the conscious mind investigated in chapter 5. This part of the chapter includes a discussion on gender, identities and capabilities. Furthermore it contrasts the concepts of agency as defined by Anthony Giddens and Amartya Sen. The second part of the chapter highlights existing development research with a focus on sanitation and how recent studies have favoured an investigation into the behavioural component of sanitation practices. The more recent emphasis on hygiene is referred to as well as sanitation technicalities such as infrastructural dimensions. *This chapter addresses Research Objective 1.*

Chapter 3 elaborates the research design and methodology. This means it will define the way knowledge seeking is approached in this thesis by elaborating its philosophical stance and by laying out the concrete methods used to collect data. It indicates the scope of the fieldwork, the use of ‘rapid appraisal’ as a data gathering approach, and includes a section with reflections on the fieldwork. Ethical considerations are referred to and the research questions are revisited.

Chapter 4 is the findings chapter, consisting of three parts. It starts with a background of local policy and sanitation efforts. The second part is a presentation of the contextual findings of the ten different places where data was collected. This is categorised according to the sanitation situation or ‘reality’ on the ground, implying that a distinction is made between settlements, which had private sanitation facilities, settlers that relied on

using a public toilet, and settlers that were practicing open defecation. *This section addresses Research Objective 2.*

Part three of the chapter uses the framework of the capability approach to highlight and evaluate ‘unfreedoms’ of the settlers with regard to their sanitation practice. *This partially addresses Research Objective 3.*

Chapter 5 discusses the findings in light of literature on human behaviour, agency and consciousness. It is divided into 5 sections. Section one briefly revisits the research intent of the study to set the context for the discussion. The second section opens up a discussion about human behaviour and consciousness. This significant section of the chapter discusses models of environmental stimuli and behavioural output, and revisits behavioural economic concepts of interest to the present study. *This addresses Research Objective 4.*

The third section of this chapter uses evidence from the field to elaborate how people’s ‘lifeworld’ impacts the conscious mind and may limit them in their mental and behavioural capabilities. This takes the shape of a case study comparison of people in a local leadership position, the elaboration of subjective realities of settlers, and lastly the discussion of possibilities for development interventions that could assist in the realization of safe sanitation. *The latter point addresses Research Objective 5; the former two points address Research Objective 3.*

The fourth section discusses how legislation for sanitation has to be inclusive of the practical realities of poor urban settlers. In the fifth section the chapter reviews the notion of an intelligent altruism seeking an ontological redirection of public policy.

Chapter 6 concludes the study. It lays out how the research contributes to the body of knowledge, states how research questions and objectives have been addressed, indicates the way forward for the research and provides some closing remarks.

2. CAPABILITIES, IDENTITY AND SANITATION

“In countries such as India, for instance, stunting occurs even among well-fed children, and that’s led investigators to consider other causes, especially poor sanitation and hygiene. Evidence shows that children who live without adequate sanitation, hygiene, and clean drinking water don’t grow as well as children who do.” (Schmidt 2014)

The literature review chapter is divided into two sections. The first section looks at behavioural aspects: the individual person as actor with the possibility to affect sanitary conditions and human well-being. It is looking at physical and psychological technologies in which one can extend the self, the impact of gender and identity roles on livelihood possibilities of people, and a conceptual discussion of agency. This is important to understand social dynamics impacting people’s behaviour, as well as how a person creates and recreates a notion of self. Section two explores the academic discourse on development initiatives for sanitation: recent practices, Community Led Total Sanitation, technicalities of sanitation infrastructure and project dynamics.

The chapter concludes that an assessment of the agency capacity settlers have in regards to sanitation in peri-urban Chennai would contribute to the discourse on sanitation in general as well as in the context of urbanisation, and this focus will therefore be one of this thesis’ contributions to knowledge.

2.1 On Consciousness and Survival, Being and Doing

Interesting for this research are factors that stimulate or curtail cognitive development, especially of the peri-urban poor. These factors can impact an individual biologically, for instance through damage causing

substances, but also socially for that social stress can lead to mental health issues.⁴

A blog entry published in the Scientific American (Montañez 2017) commented on a study by neuroscientist Kimgerly G. Noble that showed the impact poverty can have on children's brain development. "Noble recruited some 150 children from various socioeconomic backgrounds and used standard psychological testing methods to evaluate their abilities in several cognitive areas associated with particular parts of the brain." The study shows that children whose family had a higher social-economic status performed better in the measuring of five different cognitive areas, namely: language skill, perception of spatial relationships, memory of facts and events, cognitive control, short-term memory.

To deepen the investigation on physical effects poverty can have on the brain, "Noble's lab scanned the brains of about 1,100 children and adolescents and found clear structural differences based on family income. Remarkably, their results showed that those children falling on the poorer end of the lowest income bracket suffer exponentially severe losses in brain development". This highlights the significant negative impact poverty can have on human cognitive development. Looking at it from the angle of lacking of adequate sanitation it appears that there are three dimensions to it: the negative impact on brain health through sanitation poverty on physical health; the impact on mental health⁵; and the need to build up the cognitive capacity for beneficial sanitation practices. The latter is given in the example of the "Water and Sanitation Promoters" in Tamil Nadu, Pallandanpatti Panchayat, where resident women engage in educating the children and advising the adults in health sanitation practices, an initiative which has gained much praise from organisations such as Gramalaya and Annai Trust, which are non-governmental organisations (hereafter NGO) focusing on sanitation (Gopalakrishnan 2014).

⁴ More on this in chapter 5.2.1 (Models of environmental stimuli and behavioural output).

⁵ physically as pathogens hamper cognitive development in children, and psychologically due to emotional stress.

A mixed methods study by Subbaraman et al. (2014) investigated “the psychological toll of slum living in Mumbai”, which concluded that psychological stress induced through the slum environment formed a significant portion of the inhabitants’ health burden. From this it can be seen that in order to promote development, paying attention to mental health and especially the environment individuals are exposed to seems crucial.

The environment-person reciprocal cause and effect dynamic is a main theme in this thesis, and the first section (2.1) of the literature review investigates how the individual person as an actor influences one’s environment and vice versa. It is divided into three parts: the first part (2.1.1) will focus on technologies with which one acts to extend the self, for instance in manners that help secure one’s livelihood. It addresses the fulfilment one can derive through engaging in physical construction, through physical tools and psychological techniques.

The second part (2.1.2) of this section raises the issue of gender needs, vulnerabilities, roles, and the masculinities within the household and in public policy. The part concludes with indicating the usefulness of using a capability approach for the analysis of the issue of sanitation.

This leads to the third part of the section (2.1.3), which sees a discussion of the concept of agency, an integral component of the capability approach. As such the notion of agency is key in the human development discourse and it is the vector connecting consciousness to human behaviour.

2.1.1 Technologies of Extending the Self

This doctoral research upholds the argument that as humans we engage in activities that seek to extend our selves on a physical or psychological level, unless barriers to our freedom to do so prevent any meaningful extension. What is meant with the ‘extension of the self’ is the activity a person engages in, in order to ‘feel’ an improved state of being. This is related to the notion of the conscious mind, sensory stimulation,

mental processes and feedback.⁶ This mechanism of striving to extend oneself is the manner in which humans follow their instincts to secure survival. This section looks at capabilities for self-security, capabilities for self-growth, extending the self with physical tools, the technologies of the self, and extending the self through physiological tools.

Political Technologies and Capabilities for Self-Security

As humans we engage in activities that add value to our lives or that make life more liveable. To do this implies the satisfaction of basic human (physiological) needs as well as a continuous endeavour to satisfy other needs, such as safety, love and belonging, esteem, and self-actualization (Maslow's hierarchy of needs (McLeod 2017)), yet not necessarily in a linear order but according to what feels most urgent in a given situation.

Mechanisms to satisfy such needs in a social context may invariably require engagement with others. An example of this is given in the work of N.Anand (2011), which is based on ethnographic research "between a settlement in northern Mumbai and the field offices in the city water department", over a period of 22 months. It depicts the mechanisms or 'political technologies' settlers need to employ in order to get water, as a steady water supply is not given and legally limited to some of the settlers only. Such technologies are not available to all settlers but only those who manage to obtain and preserve a 'hydraulic citizenship', which denotes settlers who are able to engage in the bargaining processes with engineers of the city water department or local councillors over new water lines or water pressure. The success of such negotiations depends on the amount of social 'pressure' that can be applied. As water lines tend to lose water pressure due to 'leakages' the process of negotiations is to be repeated after some time. Settlers with a lower chance of 'applying pressure' and thus without a hydraulic citizenship, are those not legally eligible for water connections, those unable to pay for illegal connections, and those whose political vote

⁶ This is explored and discussed in more detail in Chapter 5.2.1 (Models of environmental stimuli and behavioural output).

may not be of interest, for instance as they may not share the religious orientation of the ruling political party. For this reason some settlers employ alternatives such as drawing water from local wells. Given such findings N.Anand (2011) argues that attention is to be paid to the “quotidian practices of settlers and engineers in Mumbai as they make and respond to difficulties with water pressure”, as well as that the concept of “pressure helps explain how resources, particularly water, are distributed among marginal populations in urban locations”.

N. Anand’s article is relevant for this doctoral research, as it indicates mechanisms of the urban poor to access basic services and satisfy a basic need, and by doing so it sheds lights on the prevailing exclusion of those who may not be able to engage in such technologies. The question of agency can be raised in the context of pressure as in who is able to apply pressure and who is not, and what that means for human health, vulnerability and well-being, especially as lack of access to water is endangering survival and hence the self, the conscious mind system^{7, 8}.

Freedom for Capabilities of Self-Growth

A challenging living environment can be a place for ingenuity and stimulation yet if the environment threatens the health and well-being of its inhabitants it can also lead to physical and mental exhaustion and illness. In their article on “(t)he psychological toll of slum living [...]”, Subbaraman et al. (2014) have examined the mental health of slum dwellers by screening for ‘common mental disorders’ (hereafter CMD), as well as ‘functional impairments’, which is put in relation to a ‘slum adversity’ assessment. The “findings suggest that slums, and particularly non-notified slums, may suffer from a higher burden of CMDs than non-slum communities do” (Subbaraman et al. 2014). In this manner it appears that living in the slum environment restricts and depresses some crucial freedoms of settlers to do and to be and limits possibilities for human development.

⁷ See section 5.2.1 (Models of environmental stimuli and behavioural output).

⁸ Section 2.1.2 further explores gender and identity dynamics of the issue.

One way to express oneself constructively, creating a sense of self-fulfilment, is by choosing and building one's own home. In 'Freedom to Build', Turner and Fichter (1972) assess the extent to which dwellers have freedom of participation in the housing process. This is of particular importance as, if dwellers experience greater freedom and greater control - it gives them greater feelings of well-being or 'affirmation of the self', leading to fulfilment and satisfaction. They state that "lower-income families have more capacity to satisfy their housing needs than public agencies have assumed. Or put it another way, our public resources have seemed so insufficient because we have completely overlooked one of the greatest resources of all - individual initiative" (Turner and Fichter 1972: 7). What this means in the context of the development intervention for sanitation is simply that in line with Chambers (2009), the settlers themselves are the greatest resource in finding a sanitation solution that is adequate for them, if they are aware of hygiene parameters that they need to consider. They can find a solution that works for them because "the owner-builder adjusts his priorities to his needs, spends time in place of money, and calls upon resources of material and labor that the custom builder and the developer either may not know about or may be unable to use because of their particular systems" (Turner and Fichter 1972: 10). The process of finding a solution for their selves may be more satisfactory because it requires an individual's creative energy, bears intrinsic task motivation and greater self-determination, which all contribute to a positive affirmation of their self.⁹

Turner and Fichter (1972) also point out how individuals can be treated by the state as 'invisible'. It is that "(p)eople become invisible in the housing process to the extent that officialdom either does not see them at all or sees them only in terms of quantities of stereotyped human beings" (Turner and Fichter 1972: 97). This kind of 'invisibility' is hurtful to an individual person, who naturally has a need to feel visible, valued, respected

⁹ The effect of events resulting in positive or negative emotions is discussed in more detail in section 5.2.1 (Models of environmental stimuli and behavioural output).

or merely accepted. If someone is rendered invisible, they are not even the latter.¹⁰

It further states that the “gap between dweller needs and resources on one hand and institutional standards and values on the other is the root of the problem faced by invisible people. And development policies which widen this gap instead of seeking to close it threaten everyone’s freedom to build” (Turner and Fichter 1972: 121). Turner and Fichter’s work suggests that overlooking people, their needs and individual capabilities, is harmful not only to the concerned individuals themselves but also to the urban fabric, which would see a widening division. This is quite important for this research project, as it focuses precisely on the needs and capabilities of the marginalized and ‘invisible’ people, within the context of a rapidly urbanizing city.

Extending the Self with Physical Tools

A certain body of literature, which is indicative in explaining the hardware user gap, which the lack of use of constructed toilets represents¹¹, is literature on intermediate technology. E.F. Schumacher introduced the term ‘intermediate technology’ in his economic works. Schumacher (1973) called for a technology (tools and systems for livelihood preservation and development) that would be in a position of mediation between the complex technologies of ‘developed’ countries and the indigenous technology found in developing countries – hence ‘intermediate’. This technology could provide a great improvement over indigenous technology but be significantly “cheaper than the sophisticated, highly capital-intensive technology of modern industry” (Schumacher 1973: 149). The meaning of intermediate technology rests on a measurement of the value of the tool to the user. Such value is given through technology that is low in cost and that is designed for ‘self-help’ and self-reliance (Schumacher 1972), which firstly implies a meaningful extension of the self, and secondly it resonates with the concept of agency

¹⁰ Section 4.3.3 (Assessment of Freedoms when open defecation is the norm) analyses findings from the fieldwork addressing groups of people treated as if they were invisible.

¹¹ As is for instance stated in Sreevatsan (2016)

insofar as the capability to be self-reliant means the freedom from outside help. Schumacher (1972) made the point that the technology introduced should be according to situational realities and not imported from places with different realities. Applying his argumentation to the context of this research, sanitation technology would benefit from suitability to the location as well as local maintenance capacities to ensure adequate functionality.

Intermediate technology therefore could be seen as technology that facilitates labour intensiveness through an extension of capabilities of the users. Such extension could for instance mean the freedom of productive activity at night, given the introduction of electricity generated through micro-hydro-power (Practical Action 2016), which similarly means an extension of self in terms of fulfilment to achieve a new functioning. The facilitation of labour intensiveness through technology would be for instance the introduction of hand pumps for water supply. Yet even the introduction of such pumps must be conducted in such way that the pumps end up being functional. Roy (1989: 63) gives an example how the “UNICEF-designed Three-Tier System of repairing and maintaining handpumps (sic)” proved to be ineffective. This was a top-down controlled system, with government-selected caretakers and engineers, and did not allow for a community driven initiative to maintain the hand pump while local users could repair pumps and tractors fuelled by diesel or electricity. Ultimately, people who “were tired of waiting for someone from the government to arrive and repair their pump” (Roy 1989: 64), implemented a One-Tier system, which would integrate the rural youth in maintenance and repair of the pumps, who in that way could act as almost self-reliant agents (Roy 1989: 67). This highlights the importance of self-reliance in a functioning approach or other, the freedom and the recognition to act as agents – when recognised and valued, one is more likely to be effective in one’s actions. In this sense, Roy (1989) points out, taking as an example the maintenance of hand pumps, the problem is not technological but social. The pumps might have been technologically appropriate, but did not fulfil a function of mediation between users and efficiency increase, as the users were not empowered to engage with the technology - it had not been an extension of their self, their capabilities.

Murphy et al. (2009) point out the importance for the technology to be aligned to the interest and socio-cultural settings of the beneficiaries. They underline this through stating that technological options for latrines are ‘endless’ as they can be “on-site or off-site; wet or dry; composting; contained in a closet or open; equipped with a soak away or sewer; or hooked up to a bio-digester”, but the appropriateness to local preferences and capabilities is what matters, hence this was termed appropriate technology (hereafter AT). Thus they argue that “AT not only refers to the tools and techniques used to problem solve in a development setting, it also includes the less tangible aspects such as knowledge transfer mechanisms and social, cultural, and gender issues. AT is always context specific and depends on the local circumstances in which it is applied”. Crucial for the knowledge transfer mechanisms are the involvement of “the local community, especially women”. The distinction Murphy et al. (2009) thus make between traditional engineering and appropriate technology is that the former predominantly focuses on the technological tool, whereas the latter includes mechanisms of “solution identification, technology transfer, and capacity building” tailored and adapted to the local context. In this manner it “incorporates both “hard” and “soft” aspects of technology”. This is relevant to the sanitization efforts, as “(t)here are countless examples of inappropriate, complex, and unsustainable water treatment technologies that have been designed and implemented in developing countries” (Murphy et al. 2009).

The notion of intermediate/appropriate technology fits with Chambers’ (2009) notion of the community led total sanitation (hereafter CLTS) campaign¹², as the focus is on the users utilizing and driving the technology and behavioural change. In this manner it can be seen that technology, when appropriate, can be used to extend the self of the user, increasing her/his agency, with CLTS being a mechanism to facilitate such extension.

¹² as discussed in chapter 2.2.1

Technologies of the Self

While technology is predominantly seen as tools that can be applied, Foucault, drawn upon by Burkitt (2002), offers a different or perhaps complementing account of what constitutes technology. This is a transition from a clear distinction between agent and technology to something that may be termed ‘technologies of agency’. In his article on ‘Technologies of the Self’, Burkitt (2002) refers to Foucault’s work that has a focus on the relationship between technology and the individual. This focus is more precisely on how the individual utilizes technology to reproduce and advance the self, or it signifies the operational techniques of human behaviour¹³. Burkitt (2002) draws on Aristotle’s notion of *habitus*, which he denotes as the non-reflexive component of the self. The technologies of habit, meaning the habitually trained behaviour forms of an individual are likely to conform to social norms and traditions. Yet Burkitt (2002) differentiates between ‘ingrained physical responses and reflexes’ and a ‘locus of meaningful action’ which individuals reflect on, and chooses the former as an apt definition of *habitus*. Such behavioural differentiation corresponds to the distinction of modes of thought that Kahneman (2011) makes, when he differentiates between two systems of thinking: System 1 being intuitive and fast, system 2 being reflective and slow. Importantly, Burkitt (2002) also denotes that the *habitus* can only be changed if “social institutions through which it is instilled in us” are changed. In such manner, social technologies – behavioural norms and practices – are depending on the structures of the social environment a person finds herself in. Within the context of a community where open defecation is common, it is likely that such social technologies, the ‘*habitus*’, may only be changed through specialized triggering. This is put forward with CLTS, an approach that portrays how a successful community sanitization can be achieved.

¹³ Foucault has been path breaking in his deconstruction of power dynamics (Gaventa 2003:2 in: Gaventa 2011) and technologies of self/ behaviour as referred to here. Yet this thesis does not use Foucault’s angle of analysis as it is not focusing on investigating social power dynamics at play when it comes to settler’s option of sanitation facilities. Instead it employs a Critical Theory angle (see chapter 3.1.2) combined with the analytical lens of the more philosophical capability approach by Sen (1999) (see section below “Using a Capabilities Approach for Analysis”) to assess people’s real freedoms (or lack thereof) of a dignified human waste disposal.

This “triggering” process among the community members, set off by the facilitators of the campaign, causes an emotional reaction of ‘disgust’ among the participants. This reaction is the first step for behavioural reorientation, because the emotional dimension of it allows for some sort of ‘cognitive reprogramming’ – the emotionally felt realization that long-established patterns of behaviour might actually be detrimental to one’s health. The importance here is that it makes a difference if a person is just ‘told’ whether a kind of behaviour is bad, which takes place on a conscious level, or if a person can go through an emotionally challenging experience, which is recorded on an intuitive level. The latter would be more effective as here the person has already completed the second step of a learning process, the stage of application to oneself/ including the mental categorisation process of attaching new to pre-existing knowledge, and also because an emotionally recorded learning experience directly affects our instinctive behaviour, whereas conscious learning first needs to be reprogrammed into ‘intuitive applicability’.

The first step of a learning process would be exposure to the information, but in order for this to be useful to the individual, some thought processes and effort of the person would be required: it is precisely the finding the new information useful to oneself that constitutes the second step, which she may not be in a position to accomplish. Hence the second step of learning may not be achieved. The third step for successful behaviour change would be reinforcement: the usefulness of the new behaviour needs to be established, for which non-violent community pressure can provide a possibility. An example is given in Cherukupalli (2016), where a group of children between the ages of eight and thirteen act as early morning whistle-blowers, making noise to disturb members of the community who come out to defecate in the open. Such uncomfortable experience can help to reinforce the desired behaviour.

Extending the Self Through Psychological Tools

A body of literature known as 'behavioural economics' seeks to understand behavioural choice. This literature

“suggests that human decisions are strongly influenced by context, including the way in which choices are presented to us. Behavior varies across time and space, and it is subject to cognitive biases, emotions, and social influences. Decisions are the result of less deliberative, linear, and controlled processes than we would like to believe.” (Samson 2014).

Samson (2014) offers an introduction to some concepts, which are of use for this research.

One concept is 'bounded rationality' which understands that human “minds must be understood relative to the environment in which they evolved. Decisions are not always optimal. There are restrictions to human information processing, due to limits in knowledge (or information) and computational capacities” (Simon 1982; Kahneman 2003 in: Samson 2014). Access possibilities for defecation may be limited, the dominant or long-established practice may seem safer than new, uncomfortable or seemingly strange facilities like an enclosed toilet. Such preferences are all depending on what appears to be the trusted option at times of biological urgency. Research confirming the safe choice in times of uncertainty is provided by Loewenstein, Weber, Hsee, & Welch (2001 in: Samson 2014):

“The role of affect in risky or uncertain situations is also evident in the risk-as-feelings model ... which explains behavior in situations where emotional reactions to risk differ from cognitive evaluations. In these situations, behavior tends to be influenced by anticipatory feelings, emotions experienced in the moment of decision making.”

Also applicable in the case of choice for defecation are the ‘time-discounting theories’, which state “present events are weighted more heavily than future ones” (Frederick, Loewenstein and O'Donoghue 2002, in: Samson 2014). Without doubt present relief from biological pressure takes on a high degree of urgency and in such times of urgency, the established option is most readily available. This is explained by the availability heuristic, “(o)ne of the most universal heuristics [...] Availability serves as a mental shortcut if the possibility of an event occurring is perceived as higher simply because an example comes to mind easily (Tversky and Kahneman 1974 in: Samson 2014). In this sense, long established practices come to mind more easily, unless some conscious effort has been made to establish a new practice as the dominant and preferred one. This is similarly supported by what has been termed the ‘status quo bias’, which is “(t)he preference for things to remain the same, such as a tendency not to change behavior unless the incentive to do so is strong” (Samuelson and Zeckhauser 1988, in: Samson 2014). This is as “(i)ntertia is one form of people’s propensity to remain at the status quo” (Madrian and Shea 2001 in: Samson 2014).

What is helpful to know in order to change the status quo is the importance of feedback as put forward by Thaler and Sunstein (2008 in: Samson 2014), who “point to experience, good information, and prompt feedback as key factors that enable people to make good decisions”. Such feedback is provided by continuing guidance or enforcement mechanisms of the CLTS campaign, and is a way to establish a new practice.

The research by Kahneman (2011), is crucial for this research.
Kahneman

“uses a dual - system theoretical framework ... to explain why our judgments and decisions often do not conform to formal notions of rationality ... System 1 consists of thinking processes that are intuitive, automatic, experience - based, and relatively unconscious. System 2 is more reflective, controlled, deliberative, and analytical. Judgments influenced by System 1 are rooted in impressions arising from mental content that is easily accessible.

System 2, on the other hand, monitors or provides a check on mental operations and overt behavior — often unsuccessfully” (in: Samson 2014).

The distinction between fast and slow, intuitive and reasoned mental processes, will serve as key analytical lens throughout the whole thesis.¹⁴

Concluding the Self-Extension Discussion

The section started with an introduction to the political technologies employed for survival in a settlement, followed by a discussion referring to the need for self-extension or fulfilment in one’s environment. Explaining the mechanism through which people can extend their selves through appropriate technology (in high tech societies the newest i-phone would likely be a source of happy self-extension) followed this. The next part has referred to how social norms and practices and their relevance to the topic of sanitation are important mechanisms to understand the ‘behavioural area’ people find themselves in, with the last part giving some indication of the tools that can be employed to analyse and guide human behaviour.

The purpose of this section in the literature review chapter is to draw attention to the manner in which human beings seek ways to extend their selves in everyday life, in social interactions and negotiations with others, as a reaction to someone’s surroundings or to technological instruments one is dealing with. This is how the conscious mind of an individual reproduces itself, and with doing so the ‘self’ creates a feeling of identity.

The following section investigates how social dynamics can restrict people in their freedoms to do and be and to extend their selves in a meaningful manner. This is addressed through a discussion on gender, identities and a measurement of freedoms as conceptual tool.

¹⁴ See chapter 5.2.2 for some discussion on behavioural economics in context.

2.1.2 Gender, Identity and Capabilities

This section addresses the gendered nature of sanitation, underlying which is a social reproduction of gender distinct rubrics of thought and how this impacts on poverty, development policies and education and employment.

Within a patriarchal society such as can be found in India, non-masculinities¹⁵ are socially of lower status and discriminated against or unfairly burdened¹⁶, exemplified for instance with the illegal yet still widespread practice of manual scavenging (Senthilir 2017). This research focuses on the vulnerable, with special consideration given to poor women¹⁷, given their social vulnerabilities and their biological needs for safe sanitation. In the circumstances when little privacy is given, the practice of open human waste disposal raises issues in regards to for instance safety and dignity, apart from the obvious threat of pathogens being openly released into the environment.

Pathogens Causing Illness

Corburn and Karanja (2016) discuss taking a 'relational' lens in regard to health promotion in slum settlements in Nairobi, which implies assessment of a locality in terms of its history, political relevance, physical, social and economic or business processes. They put forward that the disproportionate burden of inadequate toilet facilities lies on women and refer to Cheng et al (2012 in: Corburn and Karanja 2016) stating that "close to 90% of diarrhea in urban slums is from fecal contamination in drinking water and food". Since women are the primary care givers they also need to tend to sick family members, especially children, which are put "at multiple risks leading to

¹⁵ Meant here are lower caste people, women, children, transgender people or the elderly.

¹⁶ The issue of caste is not further explored here as the analytical focus is on human development as understood through the lens of the capability approach with the aim of expanding substantial freedoms and not restricting them. A narrative focusing on caste, both in the analysis as well as in the field study interviews would restrict and bias the outcome of the research in a way that it would no longer be aligned with the participatory approach (Chambers 1994) the research seeks to employ.

¹⁷ See chapter 4.3 (Valuing Freedoms for Human Waste Disposal).

vitamin and mineral deficiencies, malnutrition and stunting” (Corburn and Karanja 2016). Women themselves are at higher risk of urinary tract infections and chronic constipation (Cheng et al 2012 in: Corburn and Karanja 2016). Also, “(p)eople living with HIV/AIDS are particularly vulnerable to intestinal parasites, since they tend to suffer from more frequent diarrheal episodes than those with stronger immune systems”. This shows how the burden of inadequate sanitation facilities multiplies especially for caregivers to the vulnerable.

Female Hygiene Needs and Social Stigma

Sahoo et al. (2015) describe psychosocial stressors women face arising from the activities related to human waste disposal. These activities are “fetching water for sanitation use and personal hygiene, post-defecation cleaning, bathing, menstrual management, and changing clothes”. The authors provide a conceptual framework for sanitation-related psychosocial stress. It differentiates between the life-stages the person is in which correlates to different needs. The stress is depending on characteristics of infrastructure access and water supply, and also determined by context factors, such as the geographical location and caste or class system. The stressors related to the sanitation option are environmental stressors, such as “barriers to access”, “discomfort at the sanitation site”, and “animals and insects”. The social stressors are related to privacy, social restrictions and conflict. Sexual stressors are “peeping”, “revealing” and “rape/sexual assault”. The behavioural regulation is threefold. It is either seeking social support (going with company), changing behaviour – going at certain time of the day/ at night, changing location, or engaging in “maladaptive behaviour” such as withholding food/ drink or the urge to dispose of human waste.¹⁸

The added need for hygiene and care during menstruation means that women are put into positions they feel embarrassed about as they feel they may draw attention to themselves because of noisy change and disposal of

¹⁸ This framework was not used for the data collection, yet it provides a useful conceptual overview of sanitation-related psycho-social stress and overlaps with many of the issues inquired into.

sanitary napkins or odour stemming from menstrual fluids. This psychological discomfort caused by lack of adequate toilet facilities is the reason why girls miss school (Corburn and Karanja 2016). Therefore it can be seen that lack of safe toilet facilities increase the risk and occurrence of disease and physical health issues, manifests itself as a great risk to mental health, and has a negative impact on female education. Within the above conceptual framework such situations of embarrassment fall into the social stressors: lack of privacy. Non-productive stress decreases the well-being of the person as it diminishes their self-worth.

Mahon and Fernandes (2010) describe how women are not able to disinfect the sanitary cloths they use with soap or in sunlight due to lack of clean and private facilities and are not in a position to maintain physical hygiene through washing. This leads to a great degree of discomfort and shame.

One example of culturally justified violence is the social stigma involved regarding a menstruating woman derived from the notions of purity in Hindu culture: “in Hinduism, notions of purity and pollution determine the basis of the caste system, and are central to Hindu culture, including gender relations. Bodily excretions are considered to be polluting, as are human bodies in the process of producing them” (Mahon and Fernandes 2010). This becomes problematic insofar when women and girls are treated as outcasts and have to seek refuge in cattle sheds during the days of their menstruation, as is the case in Nepal (Hodal 2016). In this sense women are dehumanised during these days. Similarly, in areas in India women are sent into basic huts outside the village for the days of menstruation where they are at danger of being attacked by animals and are depending on family to bring them food as they are not allowed to cook (Kaur 2015). This means that because of a belief system surrounding the notion of impurity, women in the vulnerable state of menstruating are additionally marginalized, which further showcases the importance of convenient sanitation facilities.

Disadvantaged through Gender Roles

Brewster et al. (2006) referring to women in Africa, point out that “(d)uring daily water collection, women face the risk of drowning (from floods) and injuries from attacks.” Also, since girls often have to walk to fetch water, they can be hindered in attending school. And if a school does not have a toilet facility, parents are inclined to keep their daughters out of school to protect their privacy. In rural South African (Devnarain and Matthias 2011) report that at a primary school in a village in the Jozini district, when there is lack of water some girls are required to fetch water during school time. Not only do the girls miss out on school when they do so, they are also at risk of being raped by men and boys or attacked by animals. There is a socially ingrained task division, which sees women responsible for cleaning and cooking; meaning the task of fetching water is on them. The toilets structures available are in an insanitary state and boys and younger girls prefer to defecate in the open, without hand washing. “The key reasons of menstruating girls being absent from school were lack of privacy, inadequacy of sanitary disposal facilities and water shortages” (Devnarain and Matthias 2011). This highlights the unequal burden on girls: how lack of adequate sanitation makes them miss school, how they expose themselves to threats when collecting water, and how insanitary conditions do not match their needs, apart from the general risk of pathogens through open defecation.

Unequal Poverty Manifestation within Household

Similarly to the burden of unequal sanitation responsibility in terms of cleaning and water fetching within the context of schools are the role dimensions within a household. “Women often are likely to be the main beneficiaries of the benefits of water-supply and sanitation projects, but they seldom have the ability to control or influence household budget allocation” (P.B.Anand 2007: 150). And as Fennell (2008: 39 in Fennell and Arnot 2008) refers to Wooley (1988) “Feminist economists have shown that household should not be regarded as a harmonious unit but a site of gender conflict and exploitation”. Such indicates the unequal distribution of power, the lack of

acknowledgement and appreciation of their contribution towards wellbeing of the family. Also, the work within a household is divided according to hierarchies structured along the lines of age and gender, implying that the younger and female members would be required to spend “the longest hours in the most repetitive and low-value work” (Fennell 2008: 40 in Fennell and Arnot 2008). Low-value or repetitive work needs to be done as well, it is however unjust that such tasks are to be carried out by the lowest-ranking members of the household; the burden should be shared because an imposed hierarchical system restricts an individual’s mental freedoms and feelings of self-worth especially in comparison to each other. Such inner household exploitation is socially unjust, and given that the women in the household are in the position of caring for the family, if the women and their abilities were valued more, the family poverty might be alleviated from within.

Masculinities of Public Policy

The effect the patriarchal society has on the household is similar to what it has on the organisations dealing with water and sanitation management. This means that women “are often excluded from participating meaningfully in decision-making and management of WASH (Water, Sanitation and Hygiene) programmes” (Mahon and Fernandes 2010), even though it is women and girls who are predominantly affected by inadequate sanitation facilities through illness, time and energy for carrying water, not having a private and dignified space and lack of possibility for personal hygiene. A consequence of this is that decisions regarding WASH programmes are not made according to who would benefit the most from them but are likely to end up being diverted by masculine interest groups, for instance spending the budget to build water and sanitation facilities for an upcoming business district instead of investing in upgrading a slum settlement.

And even if the funds are not deviated to an area that benefits the person in charge of budget allocation, the modus operandi of project evaluation may be discriminating as well. “When water and sanitation

projects are based on cost-benefit analysis, there can be disenfranchisement of women.” Consequently, as intra-household budget allocation decisions are mostly made by men, it is “biased towards masculine perspectives” (P.B.Anand 2007: 150).

It is stated that the lack of taking women’s perspective into consideration “and the cultural taboos and practices surrounding menstruation in South Asia create a critical obstacle to implementing practical solutions” (Mahon and Fernandes 2010: 111). Simply put, because of the hesitance to speak about, acknowledge and address the issue, solutions to the problem are not considered even though they may be simple. This is why Mahon and Fernandes (2010: 111) state the necessity that the female issue of menstruation needs to be incorporated into the agenda of WASH policies and programmes, along with “raising awareness, hygiene education and promotion, the provision of affordable and accessible products and facilities, (and) waste management”. Masculinities need to be included and given a chance to see the complete picture of poverty through an approach that is both intelligent and caring.¹⁹

The consequences of the patriarchal society are also felt in the classroom, with education being geared at having predominantly instrumental value. Fennell (2008: 41 in: Fennell and Arnot 2008) puts forward that as an approach for analysis,

“(t)he capabilities approach replaces this focus on the ‘instrumental value’ of education, i.e. the consequences of women’s education solely in terms of their contribution to economic development, with a direct emphasis on the importance of the socially transformative and catalytic aspects of education, i.e. the ‘intrinsic value’ of the educational process, which are not so readily translatable into monetary values.”

The intrinsic value of education is important because the social glue that is the building block of a society, the undetermined but noticeable

¹⁹ This will be discussed further in chapter 5.5 (Intelligent Altruism).

community cohesion, wisdom and knowledge creation, a collegial togetherness, respect, appreciation, joyful banter, moments of laughter and warmth are value creating for who is experiencing such but these can hardly be instrumentally achieved.

The differentiation between instrumental and intrinsic value of education is mirrored in the social and productive dynamics with both households and labour markets in a paternalistic and capitalistic society, where women, or in general people, are regarded merely as “contributors to the economic process” (Fennell 2008: 35 in: Fennell and Arnot 2008) without taking into consideration that the economic process is the instrument to enhance people’s real freedoms²⁰ and not restricting them. It appears that there may be a necessity to examine the economic process and what ‘rules’ govern the players in it. Furthermore, within a rural economy context, where “local social norms” direct people’s behaviour and livelihoods, “(t)he likelihood of education releasing women from the triple burden of work is dependent on their ability to make individual choices to access education, whether this is for themselves or on behalf of their daughters.” (Fennell 2008: 47 in: Fennell and Arnot 2008). So in this sense what matters is the choice for access to education, yet poverty restricts choices for instance because of ill-health derived from insanitary living conditions, difficulties of protecting one’s privacy or catering for physical hygiene particularly during female menstruation. An approach to measure the freedom an individual has to engage in meaningful activity or doings and beings they have reason to value is introduced in the next section.

Using a Capabilities Approach for Analysis

“Sen argues that social arrangements should be evaluated according to the extent of freedom people have to promote or achieve objectives they value.” (Alkire 2002: 4)

²⁰ Explained with the capability approach, see the following section.

This quote shows that the capability approach provides a framework for measuring wellbeing within the process of everyday life, as it assesses the possibilities for people to express, expand or actualize their selves.²¹ This could be the extent to which a mother is able to protect their children from harmful diseases, which, if unsafe sanitation is practiced in the area, is nearly impossible as flies act as pathogen vectors.

The capability approach therefore seems fitting in exploring the sanitation realities of the peri-urban poor:

“The appeal of a capability approach is that it allows us to look into issues of inequality both in terms of access to and command over commodities (that is, entitlements) and also in terms of differences in individual features which may result in different outcomes. Thus, it helps us to analyse the impact of policies on well-being without becoming imprisoned in a mechanical fetish over a metric of how that well-being is defined.” (P.B.Anand 2007: 153)

What this means concretely in the context of the research is that it allows us to collect value assessments over the access to sanitation facilities or spaces of defecation as well individual ‘easiness’ of access. P.B.Anand (2007: 150) refers to Sen stating that “the expression ‘entitlement’ here is used to connote ‘the legal, political, economic and social characteristics of the society in question’ and the individual’s position in it.” The key point for this research is an understanding of the individual’s position within society because the research focus is on the subjective realities of the peri-urban poor and socially marginalised in regards to their sanitation options.²²

Following this discussion on gender, identity and capabilities is a discussion on agency, for which conceptualizations by Anthony Giddens and Amartya Sen are looked at. The respective notions of agency are discussed to achieve argumentative clarity in regards to the understanding of agency and how it is exercised: Consciously or subconsciously, reactive or proactive.

²¹ This links back to the previous section: 2.1.1 (Technologies of extending the self).

²² The Capability approach is used as a framework for data collection and analysis, see chapter 4.3 (Valuing Freedoms for Human Waste Disposal).

Thus for instance it plays a role not only within the context of political participation but also and perhaps more importantly, within the realities of day to day life, which may be full of challenges and un-freedoms.

2.1.3 Agency - Concepts by Giddens and Sen

It seems crucial to point out that, while both scholars, Giddens and Sen, focus on agency as a theoretical concept, they come from different schools of thought and epistemological stances. While Giddens' aim as a sociologist is to investigate social dynamics in a broad manner and integrated in the process of structuration, Sen's preoccupation seems rather to investigate the drivers of change independent of structure.

Giddens notably sees this co-creation of the lifeworld as a continuum over time. His understanding of structuration "implies recognising the existence of: (a) knowledge - as memory traces - of 'how things are to be done' (said, written), on the part of social actors; (b) social practices organised through the recursive mobilisation of that knowledge; (c) capabilities that the production of those practices presupposes" (Giddens 1979: 64). In this sense social norms, habits and traditions are reproduced and form 'social systems'. What Giddens' analysis misses here is the micro-behaviour of individuals on a day-to-day basis: behavioural choices made, experiences accumulated, mental structures shaped. This is important however as such behavioural key components influence individual belief systems and future behaviours as well at the ontological realities of individuals.

Giddens says about agency (action) that it

"does not refer to a series of discrete acts combined together, but a continuous flow of conduct. We may define action [...] as involving a stream of actual or contemplated causal interventions of corporal beings in the ongoing process of events-in-the-world" (Giddens 1979: 55).

With his wording 'of actual or contemplated causal interventions' it is clear that he refers to what he specifies as 'practical consciousness' on the one hand, and 'discursive consciousness' on the other. The problem here is that he is not being inclusive of notions of consciousness that may fit neither into a definition of 'practical', i.e. learned behaviour that has become automated (system 1) behaviour, nor 'discursive' thinking (system 2). Exemplary for the 'missing' notions of consciousness are system 1 - 'fast' thought processes, that emerge as a reaction to unforeseen events, as well as processes that are triggered by remembering experiences that had a strong emotional impact on the individual. Giddens does acknowledge and denote an unconscious dimension connected to the 'situated character' of agency, which relates to the mentioned 'missing' notions, but he does not elaborate nor give meaning to it:

"The parameters of practical and discursive consciousness are bounded in specifiable ways, that connect with the 'situated' character of actors' activities, but are not reducible to it. These can be identified... (as): the unconscious conditions of action and the unintended consequences of action." (Giddens 1979: 73)

It appears that a normative theory of structuration allows little room for irrational actors who may be driven by emotions, which, as a matter of fact may cause the agent to jump in front of a train to exercise their agency. This is not to say that the theory of structuration does not acknowledge deviation from given structures. Giddens certainly points out the room for agents to change structures like rules, regulations, norms and habits, which distinguishes structuration from structuralism. This makes sense in analysing society at large, and through the lens of modernism, however the emphasis on the freedom to deviate from the norm is not pronounced enough for someone who's epistemological stance seeks a theory of change. What is missing is an investigation into the freedoms an agent has as well as their capabilities to develop. This leads to Amartya Sen's capability approach. An example given by Sen to illustrate the approach is that of a person being hungry. This person could be hungry because of lack of food, yet this person

could also be fasting. Sen explains how the person fasting has the choice over the 'functionings' of eating or not eating, and exercises agency in choosing to abstain from food for a certain period of time. Yet a third scenario is possible. It could be that the person is anorexic and while they have access to food and reflectively reason that they want to eat, their subconscious has been programmed in such a way that eating appears almost impossible a doing to engage in. And while Giddens (1991: 81) explores the problem of anorexia in regards to self-identity - he sees the self as "a reflexive project", which means that he sees the self as 'system 2' consciousness only. Yet, as will be explored in chapter 5.2.1, 'system 2' or 'tertiary process cognitions' in the Nested BrainMind Hierarchy model, are only one specific part of consciousness, and it is also influenced by other parts: for instance primary and secondary cognitions.

He states that "the unconscious [...] can only be explored in the relation to the conscious: to the reflexive monitoring and rationalisation of conduct, grounded in practical consciousness" (Giddens 1979: 58). This can be challenged, as he refers to self-reflection only as a mechanism to analyse the subconscious. The works of Antonio Damasio (1999) (discussed in chapter 5.2.1) show that the conscious mind can be explored by an outside observer, who, importantly, can assess cases of brain damage of individuals who themselves may only be able to reason to a limited extent. Yet, the central mechanism of structuration, as described by Giddens, can be transferred to the human mind itself. In 'Central Problems in Social Theory' (1979) Giddens argues against the paradigm of functionalism, which sees each organic entity (humans, and other actors) fulfilling a function, and for a theory of structuration, which sees reality being co-created by an agency-structure interplay. In the brain, neural pathways build a structure, the development of which is created through a mechanism that responds and changes according to stimuli.²³ In this sense, it confirms Giddens' structuration theory on a micro-organic level.

²³ See chapter 5.2.1 on consciousness and behaviour in response to the 'lifeworld'.

Alan How (2003) discusses Critical Theory and similarly remarks on Giddens that:

“Giddens seems to suppose that interaction per se will secure us, because ontologically speaking, human subjects are reflexive interactionists, and if we have enough interaction we will become ontologically secure. I don’t think this is entirely mistaken, but ‘reflexive interactionists’ is not all we are. We have an inner world that shapes what we do in our interactions” (How 2003: 109).

He continues:

“This is not to say that our inner lives are not in a sense generated by interaction with others, notably our parents, but that the inwardness of the psyche is something that exists in its own right and exerts its own force at the level of interaction.” (How 2003: 111)

‘The inwardness of the psyche’ can be understood as the conscious mind, and if we take the theory of the conscious mind by Damasio (1999), which will be discussed in chapter 5.2.1, it is evident that the mind is influenced not only by one’s social surrounding but also by internal bio-physical processes which can impact on mental health/ wellbeing like activity of neurotransmitters or level of different hormones which may trigger agentic behaviour.

According to (Sen 1992) human doings and beings (functionings) involve the “agency aspect” and a “well-being” aspect. The former links to agency achievement and freedoms, whereas the latter links to well-being achievements or freedoms. The differentiation between the two lies in the fact that agency involves the “freedom to bring about the achievement one values”, which could be seen in broader terms, whereas the well-being aspect implies the “freedom to achieve those things that are constitutive of one’s well-being” which are part of one’s capability set. To be precise, agency is the active and conscious pursuit in bringing about, through one’s

own effort, the things that one values, whereas the well-being aspect implies the occurrence of things one values (without the necessity of direct involvement of one's own effort).²⁴ In this sense, Sen (1992) puts forward that "agency and well-being ... are distinguishable and separate, but thoroughly interdependent. The pursuit of well-being can be one of the important goals of the agent. Also, the failure to achieve non-well-being goals can lead to frustration and thus to a loss of well-being." What is interesting here is that Sen's definition does not exclude the unconscious or the biological of the agent, but rather he is inclusive by highlighting the well-being aspect, which is largely subconscious and seems to manifest itself through emotions. The well-being aspect of doings and beings is covered in chapter 4.3 which sees an evaluation of fieldwork findings. In chapter 5.3, when discussing some of the findings, examples of agency as an active pursuit to improve a situation are given.

Some research in epidemiology is seeking to link the concept of agency to behavioural practices and social structure (Frohlich et al. 2001: 781). They state that

"(m)any researchers who utilize the notion of lifestyle as a number of individual health-related behaviours are guided by the belief that behaviour change comes about primarily through some form of self-regulation, whether this be through cognitive factors (Becker 1974, Ajzen and Fishbein 1980) or through volition and self-control (Baumeister and Heatherton 1996). Implicitly, by analysing behaviour from this angle it is not understood in relationship to its position within the social structure, i.e with regard to the rules and resources of the society, but rather, as some form of activity which is ultimately under the individual's control".

As such, this quote outlines what the research is all about. As "(r)ather than basing one's evaluation of equality on access to resources we must

²⁴ This research discovers that there are people living in Chennai who are not only deprived of their agency capabilities but also their capabilities for well-being, see chapter 4.3 (Valuing Freedoms for Human Waste Disposal).

examine the choices structured by the situation that an individual is in” (Frohlich 2001: 787). An analysis of the choices structured by the situation an individual is in is given by the examination of subjective realities in chapter 5.3.2. It could be seen from above discussion that agency as a concept used to assess the possibilities of an individual to improve their situation needs to be looked at from the angles of whether it is exercised consciously or subconsciously, re-active or proactive. This is helped by examining the respective freedoms for agency as will be in chapter 4., when empirical findings of the research are discussed.

The second part of this chapter looks at best practice of sanitation within the development discourse.

2.2 Development Focus on Sanitation

“Humphrey (2009) suggests that chronic but subclinical “environmental enteropathy” – a disorder caused by overwhelming fecal contamination which increases the small intestine’s permeability to pathogens while reducing nutrient absorption – could cause malnutrition, stunting, and cognitive deficits without manifesting clinically as diarrhea” (Spears 2012).

The 2013 Fact Sheet of the Millennium Development Goals (UNMDG 2013) states that the number of people lacking “access to improved sanitation facilities” amounts to 2.5 billion, with Target 7.C of the Millenium Development Goals (hereafter MDGs) (“Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation”) being the “most lacking target” (UNeOD). The effort of the UN in regards to the MDGs and Beyond 2015 campaign includes highlighting the problem of open defecation, which is not only a cause for discomfort but proves fatal through diarrhoea related disease, and puts vulnerable people at risk. One risk factor could be exposure to sexual violence, exemplified by fatal rape incidents of girls leaving their home at night to “relieve themselves”

(Arya 2014). It may also hamper school attendance of girls, and as such invariably impacts the ability of people in pursuing their livelihood (UNeOD). Spears (2012) add that human capital and health are negatively impacted by the practice of open defecation in India, where the situation, with a 60 % global share, is particularly acute. Further, given the high population density, even in rural areas, the practice of open defecation is especially threatening (Spears 2012).

2.2.1 Recent Practice of Development Interventions for Sanitation

In 2004, the Water Supply and Sanitation Collaborative Council has published a report entitled: “Listening - to those working with communities in Africa, Asia, and Latin America to achieve the UN goals for water and sanitation” (WSSCC 2004). This report is a collective of accounts of stakeholders, stating their experience of working in the sector. The purpose of the report was to understand why “decades of effort and billions of dollars of investment in water and sanitation programmes yielded so little progress” (WSSCC 2004).

The conclusions made in this report offer some indicative ‘suspension points’ for this research. The report advocates a ‘new approach’ which sees need for a demand creation that engages people in a manner that they become agents for change and not passive recipients of knowledge. It criticizes non-genuine consultation of communities labelled as ‘participation’ and asks for community driven changes to sanitation. The ‘demand creation’ and ‘participation’ can, at first glance, be related to the concept of agency, which is central in this research. Yet, it needs to be mentioned that this approach excludes those settlers unable to become agents for change and invest time or money into upgrading their facilities as they are too busy

surviving or have no capacity to do so²⁵. The notion of agency as discussed by Sen (1999) has meaning on a level that is non-excluding.

Interestingly, the report (WSSCC 2004: 10) also points out that “(t)he whole attitude of the governing classes demoralises the poor by telling them that they’re incapable and impotent”. For instance: “Kenya’s David Omayo ... describes communities “sitting and waiting for the mzungu (white people) of the donor organisations, or someone from the City Council, to come and do it for them”. South Africa’s Tsepo Khumbane, a long-time activist for water and sanitation believes that “(t)he way we deal with communities right now undermines their intelligence, their dignity, their capability, and their innovativeness.” (WSSCC 2004: 10). The way the poor here are portrayed as losing their initiative is a learned response²⁶ towards ‘development’ engagement seeing development agencies interacting with the poor as ‘recipients’ and not conscious and capable beings.²⁷

In regards to inclusion of administrators the report states that “(f)or whatever initiatives a community may undertake on its own account, there will be a need for local or municipal government to provide logistical and practical support” (WSSCC 2004). While this cannot be denied, what needs to be further recognized is the web of patron-client relationships which play their part in service provision.²⁸

The report (WSSCC 2004) states that “ultimately it is new attitudes, structures, and policies within national and local government that can provide the necessary context of support to communities throughout the developing world”. This is a statement that seems appropriate, yet rather than coming up with something new in terms of policy and approach to sanitation, perhaps a shift towards a more inclusive and caring strategy would be helpful.

²⁵ See chapters 4.3.3 (assessment of Freedoms when open defecation is the norm) or 5.3.2. (Subjective realities of resettled settlers).

²⁶ See chapter 5 for a discussion on conscious mind system and learned behaviour.

²⁷ See chapter 4.3 for the settlers’ subjective realities.

²⁸ Also see: 2.1.1 (Technologies of extending the self) with respect to ‘political technologies’ and ‘hydraulic citizenship’.

It is necessary to point out that the mentioned report has been largely influenced by the seminal research of Robert Chambers. In particular, the 'Community Led Total Sanitation Approach', which, according to a Water Aid report (Evans et al. 2009) was developed by the 'Village Education Resource Centre' in 1997 in Bangladesh. The report also gives an account of what could be considered as hygienic latrines. Such are said to fulfil the criteria of being fly-proof, as flies could spread faecal matter to the surrounding area; eliminating smell; avoiding human contact with excreta; and keeping surface water uncontaminated.

In his paper on "Going to Scale with Community-Led Total Sanitation" (CLTS), Chambers (2009) reflects on this particular approach. It is "an approach in which people in rural communities are facilitated to do their own appraisal and analysis, come to their own conclusions, and take their own action", hence it is community-led and driven. Chambers (2009) compares traditional approaches to the CLTS approach. Most notably the distinctions of the community-led to the traditional approach are that instead of top-down teaching, it emphasises facilitation only, focusing on local designs for solutions instead of imported engineering. The incentive structure is changing too, instead of traditional, extrinsic "hardware subsidies", the new incentives are intrinsic to a person's motivation for behaviour: "dignity and self-respect" (Chambers 2009). In this manner a large financial budget is not necessary and so in fact more can be achieved with less. It is particularly such problem-solving behaviour that can fill people with a sense of achievement, affirm their selves, and be a source of feeling self-worth and contribute positively to one's self-esteem. Top-down imposed structural changes may deprive people from all the mentioned possibilities, which is why CLTS, allowing people the heightened sense of self-worth, may be more successful.

Speaking of success, a change also takes place concerning the indicators of sanitation achievement, as Chambers (2009) put forward, similarly to what above has been mentioned as the ends versus the means dimension in sanitation development initiatives. While traditionally building of latrines was the tangible but indirect indicator for success, now the direct

measurement of open defecation practice (or the lack of it) accounts as the deciding factor. This may make the success more 'tricky' to achieve – instead of seemingly straightforward investment in hardware, now negotiation with and involvement of people makes the pathway to success more 'fuzzy'. Yet it appears that the outcome, reduction of the open defecation practice, speaks for the tricky, fuzzy, and people-centred approach. Equally, instead of a traditional “targeted assistance to the poor, disabled and weak”, any decision on support would be required to come from within the community itself, instead of from outside. This can strengthen community internal perceptions of community responsibility and self-worth, whereas charitable material support from a philanthropic outside helper would not contribute to community cohesion. In a similar manner, cultural sensitivities or taboos are not of interest to the facilitators: development invariably implies change, but the drive for change also needs to stem from within the community, which means that the community itself will work on overcoming any sensitivities. While the approach was developed for rural communities who are to take initiative to appraise their situation and to design in a self-driven manner how to achieve total sanitation within their living context, the question is to what extent this or a similar approach is successfully taking place within an urban environment, and whether lessons from its effectiveness can be deduced and applied in non-village contexts.

Chambers (2009) continuously emphasizes the importance of reflexivity in the practical application of this conceptual tool. This means that over time principles in the practice of CLTS have been established and are likely to require continuous adjustment in future. Such goes in line with a reflective attitude for review and learning, and if required adaptation. What this means, as Chambers (2009) succinctly states, is that “CLTS requires reversals of entrenched institutional, professional and personal behaviour, attitudes and mindsets”. In line with such reflexivity this research is to include a reflective section, however as the research is an assessment of reality rather than a development intervention in progress, the reflective section is more specific to research methods rather than development practice.

2.2.2 Community Led Total Sanitation - Approach in Practice

Evidence for the use of CLTS is given by Evans et al. (2009) in a synthesis report combining findings from three different countries in which WaterAid has implemented sanitation campaigns. The countries are Bangladesh, Nepal and Nigeria. The report looks at both equity and sustainability aspects of the campaign. In regards to the equity aspect of the total sanitation campaign the report looks at whether there are people unwilling or otherwise left out of the campaign. Under this falls also the question of accessibility of facilities, for instance when people leave home for employment purposes. There is some evidence that the very poor in Bangladesh state to be excluded from sanitation provision as they cannot afford it or lack the land to build a latrine. In Nepal, poverty is a factor of people using unhygienic practices for defecation. In Nigeria the main disadvantaged groups were "female headed households, elderly-headed households, and households with disabled members" (Evans et al. 2009). The study shows that in communities performing well according to the sanitation campaign, those still practicing open defecation (hereafter OD) are evenly spread among income categories, but in the communities not doing too well in the sanitation campaign, the greater portion of people practicing OD significantly belongs to the poorer/disadvantaged household (Evans et al. 2009). This indicates that poverty can be a risk factor for OD, but it is not indicative for it. Evans et al. (2009) find that cultural factors may also play a role in regards to sanitation preference; as for instance the nomadic lifestyle discourages location specific investment. The equity dimension is important for the research, as it is a focus to find out about sanitation realities of those at the margins of society.

The study looked also at the extent to which the intervention projects resulted in sustained behavioural change in the three countries. The study states that the literature assumes that sanitation campaigns with a focus on community empowerment and education will result in improved behaviour. Yet, as the study shows, this is not necessarily the case, as initial behaviour change is not always achieved or sustained, and additional interventions are

needed for a lasting change in the practice. And the question is also whether efforts are made to maintain, empty and repair latrines and whether or not newcomers into the community would adopt a latrine themselves. Evans et al. (2009) state that research investigating the situation of the communities where the intervention had taken place shows that the majority of households remain open defecation free (hereafter ODF), with the high performing communities having better long-term outcomes than others. Yet, "(a) significant number of study communities that had declared ODF status were no longer Open-defecation free often less than two years after the end of the intervention". And

"In general the CLTS type triggering process appears to have been quite effective in reducing disequity in terms of access to and use of hygienic latrines. The communities, where triggering had been successful, had a better understanding of the reasons for stopping open defecation and seemed more concerned and upset when exceptions were uncovered. Those communities who had never achieved ODF tended to have a far more relaxed approach to the sanitation situation. Open defecation was not considered especially problematic, and there was less sense of the need to achieve a collective sanitation outcome" (Evans et al. 2009).

This shows the importance of successful and persistent 'triggering' for a lasting behavioural change and that longer term projects may be necessary instead of time limited campaigns. The study, being comparative, it brings together evidence for factors that appear to be positively influencing a long term ODF outcome. So it states as factor the prevalence of firstly, "(w)ell defined communities which represent meaningful units for the effective elimination of open defecation", secondly the "absence of distinct cultural groups" (which may have lifestyles complicating the campaign process), thirdly, "(a) well developed market for the supply of sanitation goods and services and/or experience of technical innovation in sanitation", and lastly, "(a) system for follow up and support to households for management and

upgrading and to communities for joint decision making and dispute resolution" (Evans et al. 2009).

2.2.3 Hygiene Awareness

In the 2010 publication of the Water Supply and Sanitation Collaborative Council, Peal et al. provide an overview of approaches to development assistance for hygiene and sanitation promotion. As can be seen, the emphasis on the 'hygiene and sanitation software' is on the approaches being 'participatory', implying that Robert Chamber's work on participatory appraisals and CLTS has carried on to provide directive and guidance for the dominant discourse on development interventions in the sanitation sector. The book: "Sustainable Sanitation for All" (Bongartz et al. 2016) which is seeking to be an academic guide for sustainable sanitation, is testimony to the persisting influence of CLTS.

It is that the focus on hygiene promotion, while not new but likely more 'fuzzy' in respect to tangible outcomes, offers a seemingly better pathway to convince the public of necessity of sanitary conditions. This is because it explains the reason why closed defecation and hygiene practices should be adopted; giving people a rational choice with a clear indication of what would be better for their well-being. The breaking point here is however that people act as agents and choose to find a way for safe defecation, avoid faecal contact, and wash their hands with soap.

2.2.4 Technicalities of Sanitation

Arguing from the technical perspective of how to promote sanitation within the urban environment, Hawkins et al. (2013) put forward the framework of the sanitation service chain and stress that the sanitation systems' effectiveness depends on the effectiveness with which all components of the chain are "developed, financed, managed and maintained sustainably". An inadequate service chain is characterized by faulty facilities, lack of water, blocked drains, and limited sludge treatment options. The

paper argues for “dedicated pro-poor initiatives ... in the context of a citywide sanitation. The problem is that services are poor and inadequate, e.g. treatment plants are not up to standard requirements and faecal waste is not managed in a way that is safe. Further an inefficient or blocked sewer system becomes the more problematic when an area is flooded, as faecal waste mixes with water and thus spreads considerably.”²⁹

Hawkins et al. (2013) put forward that ‘enabling environments’ are desirable, and the lack of consensus over what this phrase means in various contexts is acknowledged as well as the difficulty of establishing how improvement of sanitation services can take place through such lens. It is understood that policies and their enforcement play a part, as well as local laws. When it comes to financial investments in the sector, the greater part of funds is spent on water supply projects. Another issue however is the effectiveness with which these funds are used.

The document (Hawkins et al, 2013) states that it is conducive to have a single lead agency assigned to be in charge of sanitation programs. It is shown that while it is also possible to have collaborative arrangement between various stakeholders, the document affirms that some leadership as in “the coordinating role is important where implementation responsibility is shared” (Hawkins et al. 2013: 8). This thesis will clarify which agencies are involved in the delivery of sanitation services.

The paper also states the effective role NGOs can play in mediating between local government and slum community. Here reference is made to SPARC (Society For the Promotion of Area Resource Centers), an NGO involved in the Mumbai Slum Sanitation Program, which will be elaborated on below.

Discussing the technical challenges the article (Hawkins et al. 2013) indicates that for a dense living space pit latrines might not form a good solution as they consume space and even more so when the latrine needs to

²⁹ This doctoral research project briefly expands on the idea of the sanitation service chain in chapter 4.2 (Field study context findings) in the context of whether settlers have access to services or not.

be shifted. While condominal sewerage systems have been found useful in Latin America, such systems did not seem fitted in Africa or Asia. As such, community managed systems might be functional yet the article states an increased sustainability and cost-effectiveness when the systems are fully or partly managed by the public sector. Also the article says that community toilets in settlements might be a solution, and that shared toilets would be an incentive for upkeep and an option for families where space or financial constraints are present. Among the lessons emerging from the study are that pour-flush latrines can be useful in faecal sludge management as it “minimizes the ingress of solid waste” (Hawkins et al. 2013: 11), and that container systems to remove the waste in a safe manner may be a solution particularly workable for settlements or high density living arrangements.³⁰ Yet, the central message from the document is that sanitation provision is to be viewed as a provision of service instead of infrastructure and that the service delivery chain thus provides guidance in how to place investments.

The concept of the service delivery chain allows one to see sanitation as an integrated service and a process instead of relatively fixed infrastructure. It involves different types of services, for instance customer services, i.e. the services involving interaction with the customer, public services, i.e. the waste management, and infrastructure development, which are capital intensive services requiring funding from national or international body (Hawkins et al. 2013). Similarly the enabling environment can be distinguished between the environment provided by national governance, by local governance, and within the community, which takes the form of consultations.

The report concludes by reiterating that:

“Delivery of effective sanitation to all urban dwellers requires the whole chain of services, supported by a combination of domestic, decentralized, or fully networked infrastructure.” (Hawkins et al. 2013)

³⁰ The extent to which these technical specifications play their part is discussed in chapter 4.1 (Sanitation projects in rural and urban India).

“Even where interventions prioritize and target poor neighborhoods, they should be delivered within a citywide inclusive approach” (Hawkins et al. 2013).

It appears that improving sanitation conditions within the peri-urban context is marked by paying attention to the interplay between empowering the user through participatory means and public provision of services. The former is the tenor in the current dominant development discourse (however predominantly referring to rural populations), as it, CLTS (Chambers 2009), promotes a people-centred approach, which sees the need for any sustainable sanitation changes to be owned and driven by the participants or the community. Another reason for any campaigns to be participatory in nature is also that not only are the campaign changes to be sustained that way, but also because the inhabitants of a certain environment usually know their area of living best, and every living environment seems to have its own socio-political and natural conditions for being and to implement development efforts.

This research is to investigate the issue from the ‘user’ side of the sanitation chain, by assessing the settler’s freedoms to defecate in a safe and dignified manner.

The following section indicates problems of sanitation promotion efforts within India, which are of political nature and indicative for local power dynamics.

2.2.5 Technicalities of Sanitation Projects

Looking at urban sanitation, Chaplin (2011) points out that the illegal settlements in the urban context are the reason for environmental problems. She attributes the lack of access of the urban poor to adequate sanitation to the legacies of the colonial city: a divided city which had separated the British from the indigenous population, the remainders of which are still observable, and the “coalition of interests” of the ruling middle class, which succeeds in capturing the state’s resources for their own benefit. While this paper

provides an interesting analysis of the prevailing political dynamics within the Indian context, making the argument that the middle class is seizing the state's resources, it may require further investigation as the 'middle class' is far from a homogeneous group. Chaplin (2011) also refers to some success stories in regards to sanitization of urban spaces when it comes to government-NGO-donor partnerships, yet this also may be extended by an analysis as to whether or not such coalitions succeed, and why, and further how still excluded populations might benefit. The paper does provide some useful background for this work.

In the light of development interventions that seek to improve sanitation situations, McFarlane (2007) investigates the Slum Sanitation Programme (hereafter SSP) in Mumbai, India. From examining this particular programme, the author draws more general insights as to the effectiveness of urban sanitation interventions. While this long-term programme is found to be different from previous, ad hoc development interventions, there are aspects of it that could be improved. The author states that "policy infrastructure, technical infrastructure, and cost recovery" all would benefit from a more pluralistic approach. The policy infrastructure of the SSP according to McFarlane is characterized by the general political attitude felt in a globalizing city, Bombay, by the concrete interaction between government officials and slum dwellers as well as by the intra-project politics. The general attitude is that as foreign investment and increased corporatisation leads to growth in slum areas, as commitment to social housing is inadequate, yet the 'unhygienic' slum is seen as a problem. The interaction between politicians and slum dwellers is traditionally characterized by a piecemeal fashion of slum welfare, used to secure electoral votes, and indicative of political patronage systems. The intra-project politics include for instance that even though the SSP is premised to be participatory, the sanitation infrastructure of the project was mainly provided by one NGO, SPARC, whose performance in the end ranked lower than other NGOs who had a smaller share in the project, possibly because "SPARC may have been overstretched by taking on such a large tender" (McFarlane 2007). Yet SPARC was mostly chosen due to its 'prestigious' position in the local NGO sector.

As the technical infrastructure McFarlane (2007) denotes the technical challenges arising throughout the implementation of the project as well as technical 'choices'. The challenges are for instance missing water or electricity connections. It is put forward that the use of toilets available for use hinges on provision of water, electricity and maintenance. Discussed is also the lack of connection to the sewer system, resulting in a need for septic tanks, the clearing of which causes further problems. The paper points out that even though the SSP originally was to include different sanitation options - two floor toilet blocks, twin toilets, individual and shared toilets (between 2/3 families) - it is realized only with large toilet blocks.

"In order to ensure more effective structures over the long-term that reflect the needs and desires of local people, it may be that the SSP should be more flexible in order to accommodate alternative sanitation options that would vary throughout and between settlements, including individual, shared, and twin-structures. This may lead to longer time delays, but it could also lead to a more effective, long-term sanitation provision." (McFarlane 2007)

The question and effectiveness of cost recovery is, according to McFarlane, also best applied by taking the realities of the settlement into account. People living in relatively wealthier settlement areas may be happy to pay for maintenance services, whereas those of poorer areas may literally not be able to spare any amount of money without risking their livelihood. As such these are the ways McFarlane (2007) argues for more flexibility or pluralism in the policy infrastructure, technical infrastructure and application of cost recovery. This piece is of value in the doctoral research project insofar as it offers insights into the workings of the technical as well as the policy infrastructure of the local context in regards to sanitation services and development interventions.

2.3 Chapter Conclusion

This literature review chapter consisted of two parts.

Part one of the chapter focused on the individual in the context of and regarding one's engagement with the individual's environment. This was approached through elaborating the 'extension of self' as part of consciousness creation. The analysis of this is necessary to understand the socio-political restrictions to an agency for wellbeing that the vulnerable face. Different accounts of the notion of agency have been discussed.

Part two started by addressing the topic of sanitation in the field of development studies in a generalized context. It highlighted the importance for a participatory and long-term approach of development interventions in regards to sanitation coverage and usage, as well as public service provision. It further looked at how some sanitation project politics can unfold, particularly in the Indian context. Further literature focussing on sanitation development interventions in India is prelude to the findings chapter³¹, for clarity purposes of both fieldwork context and flow of argument of the thesis.

Linking this literature review back to the research question (To what extent does the sanitation situation of poor households in peri – urban Chennai pose a risk to their human security and agency?) it can be seen that, according to the different strands of literature reviewed, the research sees the need to investigate the agency capacity of settlers for sanitation within the context of peri-urban settlements. This would extend the existing body of literature in regards to development interventions for sanitation, add towards an understanding of agency and the concept of the 'self', and contribute towards research on urbanisation. The important gap in the body of knowledge this research is filling is the merger of development studies knowledge on sanitation with behavioural science and in particular a

³¹ See chapter 4.1 (Sanitation projects in rural and urban India).

discussion on human consciousness³², facilitated through the capability approach by Sen (1999).

The next chapter is laying out the research design and the methodology followed for the research.

³² See chapter 5.2. (Discussing behaviour and consciousness) and 5.3 (Discussing realized capabilities and well-being).

3. METHODOLOGY

“(R)esearch method is “a tool to collect data” while methodology refers to the “theoretical, ethical, political and philosophical orientations of the researcher” (Scott-Jones and Watt 2010: 14 in: (Lichtman 2014: 98).

This chapter will explain the research methodology. Starting with a section on philosophical considerations regarding the research it will briefly clarify why the research is in line with a subjective ontology, and defines its epistemological stance as that corresponding to Critical Theory. The research philosophy is derived from Critical Realism. The methodology for the data collection is a comparative case study analysis and a rapid participatory appraisal with the methods employed being interviews and observation. The data is analysed according to themes. Figure 3 shows an overview of the research design.

Overview Research Design

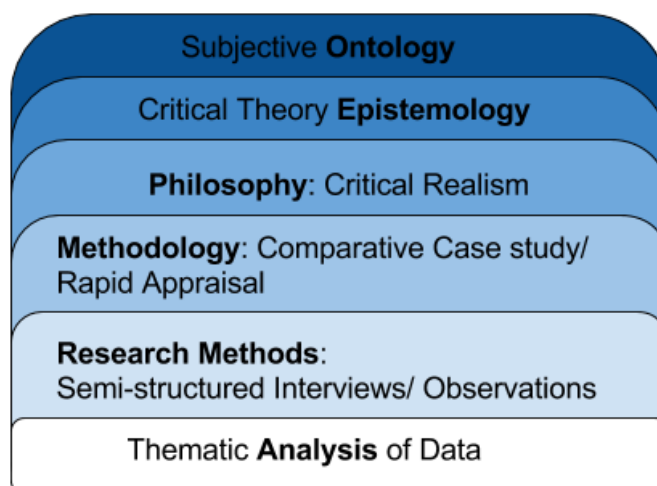


Figure 1: Overview Research Design. Adapted from Saunders et al. (2009: 108).

3.1 Philosophical Considerations

In the Cambridge English dictionary (Dictionary 2017), philosophy is defined as:

“the use of reason in understanding such things as the nature of the real world and existence, the use and limits of knowledge, and the principles of moral judgment”.

With this definition of philosophy it can be seen that the activity of philosophising is a process that involves a perceiving, processing and producing mind of a human agent. As this research is fundamentally about the capabilities of the human mind to perceive, process and produce, and the restrictions to mental activity resulting in corresponding activity, it conceptually overlaps with a number of philosophical schools of thought but especially Critical Theory and Critical Realism. Cognitive Science, as a field of study concerned with “remembering, reasoning, calculating, classifying, deciding, etc.” (Harre 2002: 1) also plays a role in the study of consciousness and agency, yet while it is of some importance, which is further elaborated in chapter 5, this research project does not follow the philosophical underpinnings of cognitive science.

The Stanford Encyclopaedia of Philosophy (Thagard 2014) lists critiques to the cognitive science approach, some of which are relevant here. For instance, cognitive science does not address the importance which emotions play when it comes to human thought and action. This thesis stipulates that emotions are likely the deciding factor in behavioural choice and access of cognitive resources: if a person is upset, they will find it harder to engage in resourceful contemplation (system 2 thinking) and are more likely to be impulsive (system 1 thinking). The approach does not consider the notion of consciousness (Thagard 2014), which is discussed also in chapter 5 in this thesis. Importantly, what this thesis is very much about is the possibilities stimulating or diminishing human thought stemming from the immediate socio-physical context. Also, the cognitive science approach

appears to be looking at the mind as a computational system and not something that is dynamically (Thagard 2014) changing according to survival needs of the individual. Similarly, the approach ignores the social aspects influencing human thought (Thagard 2014), and the dimensions of power relations and behavioural institutions.

The discussion above shows that this research is theoretically and philosophically situated in a paradigm that allows the dynamic interplay between the conscious human mind and the socio-physical environment, mediated through emotions and instincts of the people. Taking this into consideration the following addresses the ontological stance of the research.

3.1.1 Ontology

Bryman (2016: 28) states that the ontology of research in social sciences is

“concerned with the nature of social entities. The central point of orientation here is the question of whether social entities can and should be considered objective entities that have a reality external to social actors, or whether they can and should be considered social constructs built up from the perceptions and actions of social actors.”

Thus there are two ‘pure’ ways of approaching the logical argument: one is through Constructivism and the other through Objectivism. Given that this project focuses on the consciousness creation or restriction thereof through immediate socio-physical environmental factors, which in turn may be influenced by external factors (local administration as well as physical environment) it is appropriate to say that the research ontology is largely constructivist (e.g. regarding social dynamics which lead to social habits) but encompasses some objectivist aspects (looking at neural activity in the brain from an objective perspective – Chapter 5), or understanding how macro dynamics have an influence on the subjective ‘lifeworlds’ of settlers, as for instance a tsunami or floods would have.

3.1.2 Epistemology

In his text of “Research Methods in Remote Sensing”, Bhatta (2013: 26), lists four ‘ways of knowing’: intuitive, authoritative, logical, and empirical, with generally overlap in social research, with different emphasis depending on research objectives. This research thesis has an empirical part, the authoritative knowledge is given through cross-disciplinary research drawn on in the discussion, and intuition and logic are both applied in the structuring of the research findings.

Positivism and Interpretivism are seen as different epistemological stances (Bryman 2016: 24-25); and while this research thesis has an interpretivist epistemology, it applies Critical Theory as a tool and ‘way of knowing’. What this means more concretely is that the theory of knowledge of this research sees the relationship between facts as important. Critical Theory is a “philosophical scientific research program” (Arnold 2015) that critically appropriates the work of Freud. “The further development of the work of Critical Theory is represented especially in the social research program of Jürgen Habermas and the moral philosophical work of Axel Honneth” (Arnold 2015) - the research is inspired by both scholars as will be explained below. Horkheimer (1972 in Bohman 2016) states that Critical Theory seeks to be of liberating influence and has the purpose of emancipating human beings “from slavery”, by creating “a world which satisfies the(ir) needs and powers”. The key argument is that human development and relations need to be understood in the interplay between human actors and their surrounding. This can be analysed through the structures and discourse at play but ultimately will lead to where knowledge and action is reproduced: the human mind.

A scholarly position also based on Freud is that of (Loewald 1980: 250-251), a psychoanalyst who said: the “present, current experiences have intensity and depth to the extent to which they are in communication (interplay) with the unconscious, infantile, experiences representing the indestructible matrix of all subsequent experiences”. This understanding how

past experiences shape present experiences is one part of the epistemic (knowledge-creating) understanding that is the red thread of this thesis, with the other part being situational 'lifeworld' influences that impact the conscious mind:

"The concept of the lifeworld is derived from the tradition of phenomenology and refers in Habermas's hands to the meaning horizon of social actors. The lifeworld provides the context in which actors come to know themselves, where they ask questions of each other raising 'validity claims' about what is true or false, right or wrong, about what should or should not happen." (How 2003: 128)

This implies that the 'horizon' can be understood as the conscious mind of an individual, within their context. The thesis explores the frames of consciousness of settlers, meaning the barriers to valued doings and beings (capabilities). Such capabilities are achieved or negotiated also through a process of communication, for which the lifeworld is the "intersubjective context". Thus it is to be understood from the positions of subjective realities of individuals, yet also from the stance of the objective observer, with both perspectives showing "how elements of the lifeworld are functionally related to the workings of the wider system." (How 2003: 128).

This is why in Critical Theory "it is the network of relations in which facts are embedded that produces explanatory significance and that is something different to statistical significance" (How 2003: 2). Therefore, the research looks not only at present livelihood conditions of settlers, but also at migration history, family background, income earning activities, and social inclusion. Such are factors of explanatory significance with regards to an individual's subjective reality.

This approach is similar to what Levi-Strauss had developed: (Lizardo 2010) refers to Cassedy (1988) stating how "The ascendance of the concept of structure in the social sciences can be traced to Levi-Strauss's (1963e, 1966, 1969, 1985) pioneering importation of models from mathematics and

linguistics”. This ‘structure’ refers to cognitive structures guiding human behaviour: Levi-Strauss differentiates between “cognitive models of the social and the natural worlds deployed by the social agent from the actually existing *mental models* held by lay agents.” (emphasis in original; Lizardo 2010). It could be that Levi-Strauss made this differentiation to analyse rational/reflective versus intuitive thought and behaviour.³³ At this point it is sufficient to acknowledge the pioneering work of Levi-Strauss in regards to cognitive structures and behaviour.

It is interesting to note what How (2003: 128) says about communication between actors: “When actors engage communicatively with each other they reproduce/reinterpret culture, social integration and the formation of personality. What is important for Habermas, unlike Parsons and Luhmann, is that herein lies the potential for emancipation and greater self-determination (Habermas 1987a: 185-6).” This is of relevance in understanding the situation of communication between actors at different levels of the city, for instance given the lack of communication or acknowledgement of marginalized groups.

While Habermas is seen as a dominant proponent of the 2nd generation of critical theorists, Axel Honneth’s scholarship is that of the ‘third generation’ (Ray 2015: 308). The distinction between the theorists is that Habermas’ focus is on social and intellectual restrictions to discourse, whereas Honneth incorporates a dimension of morality into the analysis of human interaction, with an understanding of “mutual recognition at its core” (Ray 2015: 308). To clarify the distinction it can be said that Habermas’ position is that of rational exchange between people and the restrictions to it, whereas Honneth roots the issue at a deeper, intuitive level that rather than being concerned with the spoken word is directed by instincts that differentiate good and bad to secure human survival. These learned instincts translate into a person’s moral code of conduct.

³³ See chapter 5 (Conscious Mind, Behaviour and Public Policy) for a deeper exploration of ‘cognitive structures’ and the conscious mind.

Honneth's "three levels of mutuality... (are) love, rights, and solidarity" (Ray 2015: 308). These levels of mutuality are needs of the human soul to feel secure, which translate into the emotions of a person, which then guides behaviour. For instance, if a loved one of a friend passes away we feel the need to feel connected (because a friend is a person of importance within our 'lifeworld') so we exhibit compassion (emotion) and extend our condolences (behaviour). For human development the lack of acknowledgement on any of these three levels of mutuality leads to mental health issues as the person is threatened in their feeling of emotional security.³⁴

Ray (2015: 308) refers to Anderson (2011: 54) stating:

"In place of Habermas's focus on undistorted relations of communication as revealing a standard of justification, Honneth focuses on the progressive overcoming of barriers to full interpersonal recognition, barriers such as legal exclusion and cultural denigration".

To apply this directly into the context of the research one could think of the extent to which the peri-urban poor are discursively engaged with and what the barriers thereof are, as well as the extent to which the poor are recognized as citizens in the city.

To sum up, this section explained that this thesis is using a knowledge seeking (epistemic) lens of Critical Theory (Freud, mind-lifeworld interaction), which is about cognitive structures of the individual (Levi-Strauss), and how such structures change and develop through discourse (Habermas) and acknowledgement (Honneth). Having established this epistemic lens the next section will briefly clarify the philosophical approach to the research.

³⁴ This leads back to the discussion: technologies of extending the self, in chapter 2.1.1.

3.1.3 Research Philosophy

This section indicates how Critical Realism serves as philosophical approach for the research, given the view of Critical Theory as knowledge seeking tool (epistemology).

“Critical realism is a specific form of realism whose manifesto is to recognize the reality of the natural order and the events and discourses of the social world and holds that ‘ we will only be able to understand - and so change - the social world if we identify the structures at work that generate those events and discourses ... These structures are not spontaneously apparent in the observable pattern of events; they can only be identified through the practical and theoretical work of the social sciences’ (Bhaskar 1989:2)” (Bryman 216: 25)

In this line the thesis sets out to identify the structures of the social world the peri-urban poor are confronted with in regards to their sanitation realities.

After this theoretical part of the chapter the following will target the practicalities of the research: the methods employed, scope of fieldwork, the data gathering approach, reflections on the fieldwork, ethical considerations and research questions.

3.2 Research Methods and Approach

3.2.1 Methods Employed

Since the objective was to find out how people feel and what difficulties they may face, the design of the study is a qualitative inquiry and the research methods employed are semi-structured interviews and observation/image analysis. The key data-gathering tool was interviewing

settlers, with the help of a translator. The translators engaged for the study were university students who were fluent in Tamil (the local language) and had a good or excellent command of English. The students were involved because other (professional) translators were not available on short notice and for the time frame in which the research was taking place. They proved to be valuable assistants as they shared a social and scientific curiosity and performed in a truthful and professional manner. For accuracy purposes the interviews were audio recorded. An additional data-gathering tool was a camera to record still images of the interviewees and the locations visited, if feasible and with permission of the participants. In this manner a certain level of richness of the data was sought, to help the researcher conceptualize, remember, and portray to a high level of accuracy.

3.2.2 Scope of Fieldwork

The field visit to Chennai took place in two instances. The first visit was in October 2014; however it had to be cut short due to ill health of the researcher in November 2014. Still, some initial familiarisation with the locality and culture was possible to the researcher, which proved helpful for the second visit in January 2016.

During the 2016 visit, in total 65 interviews at 10 different locations have been conducted for the study. After visiting the first few locations it appeared that interviewing more than 5 settlers did not add substantially to the findings because the sanitation situation within a settlement is determined by the first person, confirmed by the second, and third, and any other interviewee may add towards qualitative experiences but little in terms of the reality of sanitation option in the settlement. The data collected proved sufficient for the study.

Yet the reason why 10 different locations have been visited and not just a few is because the research is particularly aimed at investigating how different living realities impact a person's access to safe sanitation. In this sense the research sought to show that 'the poor' are not one homogeneous

mass but that their livelihood is influenced by circumstantial factors within their respective 'lifeworlds'.

Assistance by local guides and translators has been instrumental and crucial. Without their assistance the researcher could not have completed the field visit in the manner that it took place – conducting qualitative interviews with marginalized members of the population. The settlements were also identified with the help of the translators in discussion with the researcher.

Parameters to choose the settlements were according to their being located along the IT (information technology) corridor stretching from the South of Chennai towards Sriperumbudur. Such location was chosen because the research sought to assess poverty within the dynamics of economic growth. Aim was to cover different types of location in regards to their proximity to Chennai city centre, inclusion in the Chennai corporation area, lying outside the Corporation but within the Metropolitan area, and being close to the peri-urban satellite town Sriperumbudur, which is also part of the Metropolitan area. The only locations not falling into this remit are the lighthouse and the fishing harbour settlements, which were visited to provide an alternative to the focus on poverty within economic growth. The locations and individuals to speak to were both determined by convenient sampling - the locations were chosen according to accessibility and/or what fitted into the remit of the study: peri-urban slums or marginalized settlements; and the respondents were approached and interviewed because they were available, falling within the target groups of women/old people/ fisher folk/ transgender people, as these are particularly vulnerable groups in the context of safe sanitation in South Asia (WSSCC & FANSA 2015), and because they were willing to participate in the study. Each interview has engaged at least one respondent, yet involvement of neighbours or family members was found to be the norm.

Further factors for choice of settlements were professional occupation of the poor as fisher folk (Kottivakkam, Lighthouse settlements, Fishing Harbour settlements), as butchers (Alandur settlement), proximity to the University the researcher was affiliated to, the Institute for Technology

Madras (IITM) (Madipakkam, Perungudi settlements), Thoraipakkam settlements because of IT corridor location which is also an area of the emerging middle classes working in IT, Mudichur because it had been heavily affected by the heavy December 2015 flooding in the city and thus offered the opportunity to examine an area's resilience and response to natural disaster in the light of the research; and two settlements in Sriperumbudur: one a village along the road from Mudichur to Sriperumbudur, located near production factories, and one just outside Sriperumbudur.

3.2.3 Data-Gathering Approach

The research method employed here is a 'rapid appraisal' method, which incorporates ethnographic as well as phenomenological elements.

According to Chambers (1992), a 'technique' to development research, Rapid Rural Appraisal (an adapted version of the approach is termed Participatory Rural Appraisal (Chambers 1994)), emerged in the late 1970s, which had its origins in a response to scholarly "dissatisfaction with [...] especially the anti-poverty biases", "disillusion with the normal processes of questionnaire surveys and their results", which proved long-winded, tedious and unreliable, and to be more "cost-effective". It "began and continues as a better way for outsiders to learn [...] It was and remains, less exploitative than extractive questionnaire surveys where much is taken by the outsider, and little or nothing is given back" (Chambers 1992). And further, in this approach, "(t)he behaviour and attitudes of (the researcher) [...] are crucial, including relaxing, not rushing, showing respect, [...] and being self-critically aware" (Chambers 1992). While this project does not take place in the rural, but peri-urban locations, the research conducted, in line with the rapid rural appraisal methodology, consists of a focus on the poor and marginalised, especially women, and a certain set of exploratory questions. Given the wish to neither be extractive nor intrusive, a rapid appraisal method seemed fitting to the research design, which was conducted in a relaxed and

not rushed setting, in a respectful manner and with self-critical awareness of the researcher.

The ethnographic elements of the study are given through the nature of the research approach. Lichtman (2014: 41) states that “ethnographers study the culture of an organisation, a group, a community, or a religion”. The research methods employed for this study (observation, guided interviews) draw on ethnography in so far that the habits of individual groups (at different locations) are investigated. In this manner the research uses ethnographic elements, to understand, in a ‘rapid’ manner, the sanitation situation and habits of a certain group of settlers, which is given according to the living conditions and environment of the settlement.

The phenomenological aspects of the study are given through the fact that it explores “structures of consciousness as experienced from the first-person point of view” (Smith 2013). This is achieved by inquiring into the lived experiences of the settlers in regards to their options of human waste disposal. This being said the research is neither a fully-fledged ethnography nor phenomenological study, as the empirical part is complementing a theoretical part investigating the conscious mind system and agency³⁵.

3.2.4 Reflections on the Fieldwork

Being a critical realist means that a reflective attitude towards the research process is fundamental. As a female researcher of ethnically white appearance who does not speak the local language I was not sure to what extent speaking to poor settlers would be feasible. Firstly, I was relying substantially on the help of translators, which required a judgment to what degree they were qualified and would be able to cope with the situation. Three assistants were students at IITM, one was doing his Master’s at the neighbouring Anna University. They were chosen as they spoke the local language and English and were in a position to follow guidance and direction

³⁵ See chapter 5 (Conscious Mind, Behaviour and Public Policy).

from the researcher. All four assistants I was engaging with ended up learning with me about their country and of circumstances they had not been aware of before. For instance, that open defecation is wildly practiced, that it poses a severe risk to human security, or that the poor are involuntarily displaced.

Secondly, as a female I was in a position to potentially explore female hygiene issues (i.e. menstrual issues, maternity health, sexual health and safety) but since the interviews were mainly assisted by a male translator, the challenge remained, as the degree to which the translator would engage in these questions was limited because he was not comfortable inquiring into these issues. It was possible to ask for general information, but no further hygiene specifications or challenges could be inquired into. Having a male assistant was important for reasons of security.

Also, we came across an interviewee whose adult child was transgender (LH-HH6), yet at that moment the researcher was not prepared to ask whether it would be possible to speak to the person. It would have been interesting, given the focus of the research on specific marginalized groups, but we did not want to intrude and the researcher was not mentally prepared to probe further in a non-intrusive manner given that this interview location was one of the first locations visited and I had not yet conceptualized how to react in such a situation.

Thirdly, we had to be cautious about our security, for instance it was not safe to be in settlements in the evenings when intoxication through cheap alcohol was a common pastime, or it was said to not be safe for me to go into settlements without male company.

Since the research took place a few weeks before general elections I was told by one of the assistants that people are likely to be happier to talk. Yet on the other hand some people assumed that the reason why my translator and I would be visiting was regarding the election – a situation that my helper could rectify in a few sentences.

It was emotionally challenging to visit some settlements, especially in the light of knowing the danger the settlers and their children are exposed to through open defecation practiced, but also to realize the hardship of the settlers given their livelihood conditions (slum settlement, menial or physically demanding employment, unhygienic public toilet facilities, etc.). Personally I believe that an attitude of appreciation towards the settlers willing to engage in a conversation with us, some moments of laughter and mutual recognition given through the interaction, could give me the strength as well as the determination that it is important to record their precarious situation. Not just for me as an aspiring researcher, but for them, as conscious beings with a soul.

The next section will cover important ethical considerations of the research.

3.2.5 Ethical Considerations

The research is conducted in line with what Flyvbjerg (2005) terms a phronetic model of social sciences.

“The phronetic model is named after the Aristotelian concept *phronesis*, which is the intellectual virtue used to deliberate about which social actions are good or bad for humans. The basis of deliberation is value rationality instead of epistemic rationality.” (Flyvbjerg, 2005: 39, emphasis in original).

While Flyvbjerg (2005) is debating the usefulness of social science in the article, differentiating between epistemic and phronetic social science, his elaborations of what it means to pursue phronetic science is helpful to elaborate ethical dimensions of conducting research as well, as it promotes the production of “reflexive analyses of values and interests and of how values and interests affect different groups in society” (Flyvbjerg, 2005: 39).

In this manner the research is seeking to add towards knowledge that is of social value but derived in a manner that respects the personal values of

individuals participating. The notion of deliberation played a role in the participant interaction insofar as the interview process was deliberative, in which interpersonal power dynamics were paid attention to and aimed at being taken apart and reconstructed. What is meant with that is that the participants (poor, marginalized slum settlers) were approached by middle class researchers (privileged, given university education and social status/ being a foreigner) which initially equates a power dynamic in favour of the economically more affluent, but given the way we interacted with them: asking for their permission, respecting their time, asking for their opinion and experiences, the dialogue was to show and acknowledge the participants as valued partners in the process, and it was aspired to reduce the power distance that socio-economic status differences initially implied.

Some gestures during the interview process were for instance that when the researcher was offered a chair, it would be given to the interviewee instead, to show respect and value for the interviewee, or to sit on the floor together to be on the same level, despite being offered a chair. Of course the researcher had to deliberate with the local guide about the appropriateness of these actions as not to offend the participants in their offering of the chair.

Such interview dynamics show the nature of qualitative research (QR), and

“(m)uch of QR is very personal. This is particularly the case of the data involved in the narrative. How much should be anonymous and how much should be revealed can be negotiated between the researcher and those who are involved as participants in the research. In the use of visuals, achieving anonymity is not possible. In fact, some participants might want to be revealed” (Lichtman, 2014: 128).

The participants of the study were informed about the purpose and scope of the study and signed a form confirming their understanding of it as well as the fact that their identities would not be revealed and treated with confidentiality. We, as the research team, consisting of researcher and

translator, were very aware not to intrude into the settlers' privacy. We ensured the interviewees that they could at any point withdraw from the interview and request for their information provided not to be used. When the interviewee seemed hesitant to the researcher, who tried as much as possible to engage with the interviewee by maintaining eye contact and a friendly demeanour, but who was relying on the translator, would probe if the interviewee wanted to continue or if they felt comfortable with our questions asked. The only reason one interviewee stopped answering questions was because she needed to attend to food she had on a cooking place, so it would not burn (SN-HH3). During the fieldwork some people approached did not want to partake in the study and their wish was respected. Any recordings made are securely stored. In regards to health and safety issues of the research team we did take caution to avoid being in settlements after 6pm, or had to avoid midday heat for chances of becoming too warm.

The chapter will conclude by revisiting the research questions and indicate the interview questions and themes discussed in the conversations with the settlers interviewed. Following this section is the findings and analysis chapter.

3.2.6 Research Questions Revisited

Research questions:

- I. To what extent does the sanitation situation of poor households in peri – urban Chennai pose a risk to their human security and agency?**
- II. What are the dimensions of psychological and agency freedoms of the people in such contexts and their consequences?**

The empirical part of the research, the process of speaking to settlers, saw the exploration of the following questions:

- What access options for defecation are available? How can these be evaluated using an understanding of capabilities and freedoms?
- How does one deal with what is available? What is the impact of limited capabilities or freedoms on the individuals or community?
- Why is the situation as it is? Which ‘forces’ restrict or allow individual freedoms and choice?
- To what extent does the situation pose a risk to human security?
- What intra-household or circumstantial dynamics might have impacted the interview?
- What role does education in behaviour play in behavioural choice?
- How are the locations and circumstances different in regards to sanitation access? Why?

The main questions asked in the participatory conversations were for respondents to give evaluative judgements of their perception of the space for defecation in regards to:

- Cleanliness
- Convenience
- Safety
- Sense of privacy

- Control over personal space and needs

3.3 Conclusion

The chapter has elaborated the research methodology. It defined its epistemological stance as being positioned within Critical Theory and the philosophical approach as Critical Realist. The research methods were stated to be mainly qualitative interviews and the scope of the fieldwork was laid out: 10 settlements were visited, 65 people interviewed. The data gathering approach was defined as rapid participatory appraisal, followed by sections stating some reflections on the fieldwork as well as ethical considerations, which included a reference to the application of phronetic research. The chapter concluded with the research questions and themes around which the interviews were conducted.

The following chapter will give the context, present the findings of the study as well as an analysis of the settlers' limits to freedoms for safe and dignified sanitation.

4. SANITATION REALITIES IN AN INDIAN PERI-URBAN CONTEXT: CHENNAI METROPOLITAN AREA

The following is the findings chapter, divided into three parts.

Part one (4.1) is setting the background through literature and highlights past sanitation efforts in India and differentiates between governmental and non-governmental actors and approaches. It also elaborates on the particularities of researching a setting in the peri-urban area of a city.

Part two (4.2) elaborates the context findings of the places of data collection and their differences. The findings indicate that open defecation within the greater Chennai region is normally practiced among the poorest members of the population - in the city centre, in the 2011 newly annexed areas, and in the peri-urban satellite town of Sriperumbudur respectively. What follows are the findings in regards to 2 further categories: where people use public toilets, or where settlers share a toilet with other families/ have private toilet facilities. The section concludes that open defecation is not an exception in the context of Chennai city or the Metropolitan Area. It indicates that a variety of external factors can play a part, leading to the practice. *This section addresses Research Objective 2.*

The last part of the chapter (4.3) evaluates the settlers' sanitation behaviour and corresponding 'unfreedoms'. The focus here is very much on mental space and psychological freedom. *This partially addresses Research Objective 3.*

4.1. Sanitation Projects in Rural and Urban India

This section is looking at sanitation project circumstances in the context of India. It will start with exploring government initiatives that have taken place, to then look at some NGO involvement, after which the need for a variety of vision for peri-urban sanitation is discussed.

Government Initiatives

To improve the situation in India, efforts such as the Total Sanitation Campaign have been implemented. The Total Sanitation Campaign (hereafter TSC) was the policy response to the common occurrence of open defecation in the country initiated by the Government of India in 1999. It had the vision of remedying the problem by 2012 (World Bank 2010.). This response involved local governments and targeted rural communities, facilitated by state government as well as the central government. In 2003 a cash prize and official recognition scheme (Nirmal Gram Puraskar (NGP)) was implemented to further incentivize the policy implementation among the Gram Panchayats (GP) (World Bank 2010).

The ten years of implementation (2001-2011) of the campaign have seen some success, “infant mortality decreased by 4 per 1000”, but “sanitation coverage remains substantially incomplete” (Spears 2012). The difference in this campaign to previous sanitation efforts is supposedly that the focus of the development initiative is not on infrastructural provision but on behavioural change facilitated through local leadership. For this village, governments had been incentivized with a “Clean Village Prize” scheme.³⁶

The paper provides several ‘policy lessons’, which emerged through the experience of the TSC. As first lesson the paper reiterates the urgency for safe sanitation stating that the prioritization of the safe disposal of human

³⁶ One of the fieldwork locations visited (Mudichur) was a village that won the prize. See chapter 4.2.3 (Shared and private toilets) and 5.3.1 (Case study comparison - Mudichur and Perungudi Medu).

excreta within India is crucial as 'negative externalities' of the issue imply that everybody is affected. "Recent medical research suggests that fecal germs can importantly harm children's growth and development without necessarily causing diarrhoea" (Spears 2012), making the problem less obvious as the disabling illness is not visible.

Further the paper indicates that from the angle of a rational agent, it is that "(b)ecause open defecators fully appreciate their own benefits, but not other people's costs, they openly defecate "too much" from a socially optimal perspective" (Spears 2012). This is why an effective behavioural awareness creation and institutional guidance seem required, something the Total Sanitation Campaign has aimed to deliver. As second policy lesson, Spears et al (2012) state that initial favourable impacts of the promotion of latrine use have been recorded as improvements on children's health. Children especially are negatively affected by OD as

"germs from unsafely disposed off feces cause chronic illness and adverse changes in the lining of the intestines of small children, importantly keeping them from growing and developing at critical early ages... these early health deficits have life-long consequences for human capital, including for achieving adult cognitive potential" (Spears 2012).

Hence Spears (2012) points out that this invariably impacts the human capital and labour market of the country, underlining the urgency for policy efforts from an economic perspective.

The third policy lesson is that investments into the campaign and behavioural incentives are relatively low cost means of preventing infant deaths, with the fourth being that the village level of governance has proven critical for the promotion of sanitation. "One explanation that Kishore and Spears explore is that village-level sanitation coverage is the outcome of a coordination game. In this game theoretic situation, the value of an action depends on whether other people are doing it, and there are incentives for doing what everybody else is doing" (Spears 2012). This implies that on a

community level, behavioural adaptation to what is considered the norm in the community is likely. This is not only the case on a village level, but also in other communal settlements.

The fifth lesson the paper states is that performance related incentives for local leadership have proven useful and should be encouraged and strengthened. As sixth lesson it puts forward that additional costs for further extension of the TSC scheme are likely to be substantially outweighed by the benefits such would bring. For instance,

“children exposed to better sanitation coverage in their first year of life showed greater cognitive ability at age six [...] This result importantly indicates that widespread open defecation may not only be a substantial threat to health in India, but also carries a large economic cost in failure to meet human capital potentials” (Spears 2012).

This only stresses the importance of sanitation efforts and elimination of open defecation within and around communities. As seventh lesson the paper puts forward the need for good quality administrative data sets of health outcome recordings.

These lessons as recommendations are important. It is interesting that while behavioural campaigns are not only useful but also low in cost, which should make their application comparatively simple in theory; in reality, even if promoted as campaigns for behavioural change, the evidence laid out in the article indicates that there has not been any large scale adoption of them.

For instance, a newspaper article (The Hindu 2014) promotes that a ‘change in mind set of rural people’ would be crucial for the success of the total sanitation programme. According to collector (chief administration and revenue officer) N. Venkatachalam (ibid), “(i)nitatives of the people and their will to avoid public defecation alone would change the present scenario”. The article states “the condition of 52,009 individual toilets constructed by households was very bad and unfit for usage, according to a 2013 survey”.

This shows that the aim should not be the construction of a toilet, but the practice of adequate disposal of human waste. This further implies that even though behavioural changes are claimed to be the target since the initiation of the Total Sanitation Campaign in 1999, what a survey found in 2013 are a significant number of toilet constructs unfit for use, implying that open defecation remains to be practiced despite the sanitation hardware in place.

Since its inception in 2014, the current government of India has proclaimed to focus on advancing public health, however Sharma (2015) states that in regards to the aspirations for sanitation coverage, experts have voiced their concern that the provision of toilets would be enough to improve the health of the population and stress the necessity for behavioural change. The research is to probe in the field to what extent the 'Swachh Bharat Abhiyan' (FE Online 2016) the cleanliness campaign of the government, can be seen as effective. Building toilets alone to declare a village open defecation free (FE Online 2016), may not be a reliable unit of measurement.

In an article in the Guardian, Cherukupalli (2016) describes a community activity to control and change the open defecation status in an Indian village. This is according to the established CLTS practice and seeks to cater to the governmental Swachh Bharat campaign. This practice becomes problematic however, as the article points out, when individuals who may not be as quick or willing to refrain from the old established practice of open defecation, get targeted, harassed or violated against. This becomes especially problematic when achievement of 'open defecation free' deadlines draw closer and the community seek to meet the deadlines by all means. Here Cherukupalli (2016) highlights that violence and coercion against individuals is to be avoided and that local leadership is to step back from applying pressure and let communities solve the task in their own time.

The question here is how government may foster sanitary conditions for the public good without imposing technologies that are not accepted, or use force to push for behavioural change which violates human rights or results in unsustainable practices?

NGO Involvement

Apart from the government, other social actors, e.g. non-governmental organizations (hereafter NGO), also promote development initiatives for sanitation. For instance, Agoramoorthy and Hsu (2009) rely on the experience of the NGO 'NM Sadguru Water and Development Foundation' to argue their case for toilet construction for individual households as effective intervention to limit open defecation. Importantly, the article also details how the NGO succeeds in delivering necessary 'software' dimensions to the people in the form of showing an educational documentary, which includes the illiterate, and by highlighting and tapping into the experience of sickness and medical costs during monsoon season. By showing these practical implications and attaching an emotionally felt value to it, likely to happen for those who know of the hardship of paying for medical treatments, the community can be convinced to have toilets.

In Orissa, an NGO that goes by the name of Gram Vikas, operates on the understanding that

“water and sanitation are social issues [...] every single household in the villages where Gram Vikas operates should be connected to the same water mains: Water is piped to each house, which contains a toilet, a tap, and a bathing room, all connected to the same system. For the high-caste households, this means sharing water with low-caste households, which, for many in Orissa, was unacceptable when first proposed” (Banerjee and Duflo 2012: 46-47).

The principle that the NGO only would start work on the condition that the whole village agrees to the project means that the project is not merely an infrastructural change but also a social change with the village becoming more inclusive. The aspect of inclusivity and access to sanitation for the poor and marginalized is central to this research.

An initiative to provide sanitation arrangements in Tamil Nadu is the NGO Gramalaya, whose mission is “to promote water, sanitation, hygiene and overall improvement of the rural, urban, coastal and tribal population in India whereby the empowerment of marginalized communities especially the women and children is ensured” (Gramalaya 2013). It does so through education in health and hygiene, women’s self-help groups, and facilitates supply of safe water and construction of low-cost toilets through micro-credit allocation. “Since 1987, Gramalya has been operating in Thottiyam and Thathaiengarpet and Thuraiyur Block in the rural areas and in the slums of Tiruchirappalli City Corporation in Tiruchirappalli District” (Gramalaya 2016). This research probes the extent to which NGOs such as Gramalaya have reached the poor and marginalized in peri-urban Chennai.³⁷

Transparent Chennai is a development NGO working in Chennai city. Sethuraman (2012), author of a ‘Transparent Chennai’ report on urban sanitation, provides an account of the situation, with over 50% of households without toilet facility and as result of the study lists a number of recommendations regarding public toilet provision in the city of Chennai. The recommendations made in the report concern the administration and management of toilet facilities, which includes maintenance and data mapping, adequate location and access to the toilets, increased investment for toilet provision, legislation for mandatory public and private toilets, making the toilets supervised by the neighbourhood or unemployed/retired sanitation workers, and advocating the use of toilets. This thesis examines the availability and conditions of public toilet facilities of some marginalized communities within peri-urban Chennai, as it seeks to get a picture of the sanitation realities of the peri-urban poor.

Variety of Actors and Approaches Regarding Urban Sanitation

“We are witnessing the early stages of a shift from toilets as fundamental citizen rights to gradually marketized commodities

³⁷ This is done by asking the settlers directly of their experiences with local NGOs, as outlined in chapter 5.1 and discussed in chapter 5.3.2.

whose success depends on the entrepreneurial capacities of civil society groups and small companies: even bodily waste is not a limit-point to capital.” (McFarlane 2012, p.2807 in: Amin and Thrift 2016)

A vision for urban sanitation is proposed by Narain (2012). She states that the development of a sanitation system, which is sustainable as well as affordable, poses an important challenge to India. She calls for a comprehensive wastewater system and innovative toilet technologies as means to deal with the problem of pollution. Also she highlights the consequences of rapid urbanisation, with cities “growing so fast that their infrastructure cannot catch up” (Narain 2012). Yet a suggestion she puts forward is the application of technologies that support a diverse ecosystem: “(o)pen drains might become planted waterways, with the vegetation cleansing the water. Or microbes might be used to decompose and de-pathogenize effluent. Sewage must be treated as a resource — turned into water for drinking, irrigation or industry” (Narain 2012). This would provide an innovative technological initiative for sanitation, which however might be challenging to realize, given livelihood complexities in a city – a city is far from a homogeneous space. This is particularly the case in the peri-urban areas with its own dynamic characteristics³⁸.

Furthermore, applying a single vision may be problematic given the multitudes of realities within the urban space, particularly when it comes to marginalized households: “life close up may be one of hardship and struggle and systematic exclusion from the staples of everyday life and the city’s formal economic circuits. In short, there is considerable ambiguity over the scale and dynamic of world urban poverty” (Amin and Thrift 2016: 126). Therefore it follows that firstly an understanding of ‘life close up’ is needed. Secondly, that particular attention needs to be paid to those ‘excluded’ from a

³⁸ (See following section: Sanitation in the peri-urban context)

city's official portrait. And lastly, that single realities of people living in the city can vary greatly. This research thesis addresses all three points mentioned³⁹.

How different parties engaging in an urban sector view the sanitation landscape within the city is portrayed in an article by McFarlane and Silver (2016) who coin the phrase of 'poolitical tactics' to encompass four different strategies of sanitation 'actors' in the context of Cape Town. The *spectacle* has been the desperate action of sanitation poor urbanites which involved throwing human faeces at official spaces. *Auditing* involves the 'slow' change through working in official language and by means of the route of raising awareness and accountability. *Sabotage* has been performed by some actors who would break toilet blocks they were not happy with. And an official performed tactic in dealing with sanitation issues is *blockage*, which is the attitude of blaming factors such as community leadership, land availability/ownership and infrastructure maintenance (in light of vandalism) as to delay or prevent sanitation improvement. The article highlights the multitude of realities of actors involved. This research thesis is situated along the notion of 'auditing' because it seeks to provide evidence to raise awareness and accountability, and with the discussion of a human conscious mind system⁴⁰, which every human being shares, it seeks to emphasize the public good characteristics of safe sanitation, as to circumvent official 'blockages'.

Sanitation in the Peri-urban Context

Since the research is located in the peri-urban areas, specific urbanization characteristics need to be clarified. When it comes to understanding this context, a useful guide is given by Gilbert and Gugler (1992) in their analysis of urbanization in less industrialized countries. For instance, it is helpful to know that urbanization is produced by the adoption of a capitalist system, which spread across the global economy, and which saw the previously self-sufficient rural population drawn into the capitalist mode of

³⁹ See section 4.2 (Field study context findings).

⁴⁰ See section 5.2.1 (Models of environmental stimuli and behavioural output)

production - producing raw material for the market, and themselves being “dependent on goods and services in the market” (Gilbert and Gugler 1992: 63). In this manner, with wealth accumulation being situated in urban centres, the tendency for migrant workers to move closer to the centres is evident. In so doing,

“many urban dwellers live in desperate conditions [...] Most could barely feed their families. The very poor could manage only because they were single. However, even those in the poorest trades said that they were better off than they had been in the rural areas.” (Gilbert and Gugler 1992: 64).

Such migration background helps to understand the position of the poorest settlers in peri-urban settlements.

Allen et al. (2006) study the challenges of governance of water and sanitation service provision in the context of poor peri-urban areas. The peri-urban areas are characterized by the fact that due to municipal capacity constraints they may not be included in municipal water and sanitation services. As high investments to cover these areas with basic services are unlikely, the study proposes decentralised, small-scale solutions, which are more fitting to local conditions. The study provides a good foundation for the research as it highlights certain peri-urban characteristics. For instance, the fact that as a link between the rural and the urban, the peri-urban is the area of traffic flow but also of urban waste, and it features a mix of urban as well as rural characteristics. The population in the area is in flux; it is arriving, migrating or commuting. Public authorities and basic service provision are institutionally fragmented and the multitude of actors means also unclear areas of responsibility. It is that the peri-urban interface generally lies outside the coverage of the “formal [...] water and sanitation systems”, and as “many peri-urban settlements develop outside existing formal regulations” (Allen et al. 2006) their right to basic services is somewhat restricted. The paper suggests that where formal rights to services are affected, maybe focus on collective land rights and payment for services could be an option. This is as a centralized service supply may not be feasible for peri-urban areas due to

a) “lower population density”, b) “higher distance to centralized wastewater disposal systems”. This also means that need driven coping strategies are often more effective than a public response, however a serious challenge is non-institutionalized management of solid and liquid waste (Allen et al. 2006).

This backdrop of peri-urban characteristics sets the scene for the field study context findings discussed in the following section. It begins by mapping out local geo-political dynamics influencing migration and settlements.

4.2 Field Study Context Findings

This section provides an overview of the slum settlement locations that were visited for the purpose of this research. First it introduces the contexts of the settlements and gives an assessment about their sanitation situation. Then the fieldwork locations are introduced in groups, according to their sanitation arrangements: Open defecation, use of public toilets, and shared and private toilets. At the end of each location synopsis an overview table stating the characteristics of the interviewees is provided. This serves on the one hand to help the reader understand the livelihood scenarios of the interviewees, and on the other to add clarity to the data by demarcating the interviewee’s circumstances. What follows is a discussion of the reviewed context findings and some concluding remarks.

As Chennai is rapidly growing economically, so is its population size, with settlers populating the area. An analysis of growth dynamics in the Chennai Metropolitan area by Sekar and Kanchanamala (2011) states the following eight reasons why growth of villages in the greater Chennai area is taking place:

- Availability of access to road network
- Availability of access to rail network
- Nearness to work places (such as institutions and industries)
- Availability of developed land at cheaper cost

- Government projects or schemes
- Military and Air Force stations, cantonments
- Religious places
- Recreation centres

Figure 2 is a map that indicates the approximate locations where field data has been collected. These locations have been determined by convenient sampling, driven by exploratory interest to speak to settlers in the different stages of urbanisation and proximity to the city centre. Some of the fieldwork locations overlap with the stated growth dynamics listed by Sekar and Kanchanamala (2011) as “Reasons for Growth of Villages During 1971 - 2006”. From this list can be drawn that

- Alandur emerged in 1971 because of “urban spill over and extension of city limit in 1977”
- Kottivakkam emerged in 1991 due to “urban spill over and extension of city limit in 1977”
- Mudichur emerged in 1991 due to “access to road network and land availability”
- Madipakkam emerged in 1991 due to “access to road network and land availability”
- Pallikaranai emerged in 2001 due to “access to road network and land availability”
- Perungudi emerged in 2001 due to “Nearness to work places (industries/ institutions), access to road / rail network, land availability”

This means that from the year of the data collection (2016), the village of Alandur has been documented to exist for 45 years, whereas Kottivakkam, Mudichur and Madipakkam have been documented to exist for 25 years. Pallikaranai and Perungudi have been documented for 15 years. This shows the urbanisation process of the city, which is interesting as it is indicative for livelihood realities of the people, and as such it frames the inquiry into the sanitation realities of the settlers.

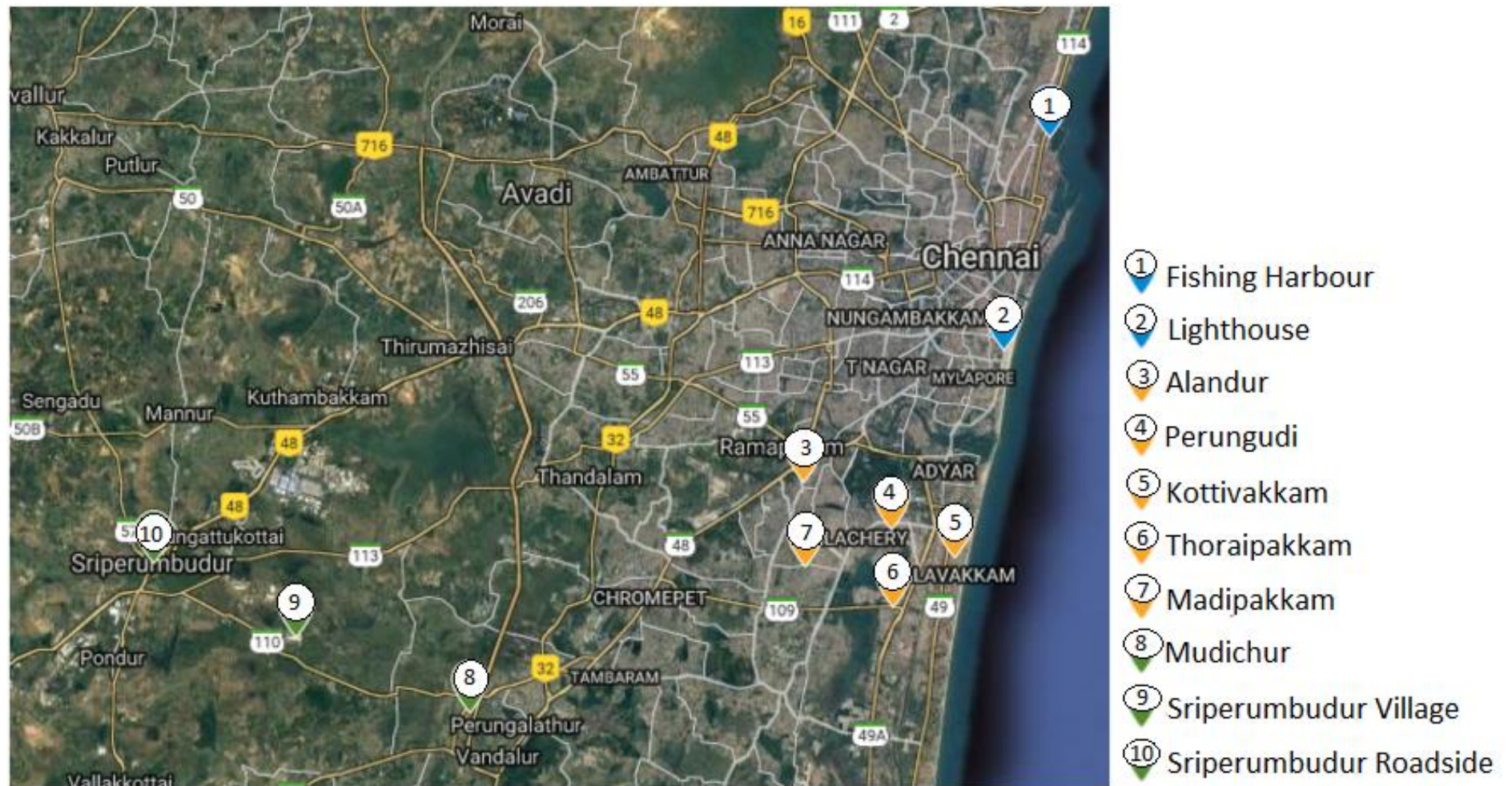


Figure 2: Map of fieldwork locations. Source: adapted from Google Maps (2017).

4.2.1 Open Defecation within the Greater Chennai Region

This section answers the question whether open defecation is a practiced reality within the greater Chennai region. It draws on field study findings that have identified that within the greater Chennai region, people are in fact practicing open defecation. Five out of the ten locations visited showed evidence for settlers to normally defecate in the open. Interestingly, these locations were as much in the inner city (near Fishing harbour, and Kottivakkam) as in the completely peri-urban areas (Sriperumbudur).

Table 1: Overview of sanitation options at locations visited; Source: Author.

<i>Location</i>	<i>Private toilet</i>	<i>Shared toilet</i>	<i>Public toilet</i>	<i>Open defecation</i>
Fishing harbour:			X	X
Lighthouse:	(a)		X	
Kottivakkam:	X		X	X
Perungudi:	X	X		
Alandur:	X		X	
Madipakkam:	X		X	(b)
Thoraipakkam:				X
Mudichur:	X		(c)	X
Sriperumbudur Village:	X			X

Sriperumbudur Roadside:			(d)	X
-----------------------------------	--	--	-----	----------

- a. One of the interviewees had a family toilet used by 20 people
- b. Elderly woman states to occasionally defecate in the open as way to toilet too cumbersome
- c. 1 interviewee states to be using public toilet
- d. 1 of total 9 people engaged in interview process uses public toilet

X - majority of interviewees

x - minority of interviewees

(Each location saw 5-9 people partaking in the interview process.)

In the following the particular situations of the five locations where open defecation is practiced will be explored, through the evidence gathered in the field. These locations are seaside settlements by the fishing harbour, seaside settlements in Kottivakkam, roadside settlements near the Pallikaranai marshland, a village near Sriperumbudur, and roadside settlements outside Sriperumbudur town.

Inner City: From Lack of Adequate Facilities to Practiced Habit

Fishing Harbour (FH)

The settlement visited here was stretched out by the sea; it had the sea on one side and on the other it was next to a high road. The huts in the settlement looked very run down. Through the interview process it became evident that there used to be a corporation toilet in the area but it has been demolished due to road expansion 4 years ago (2012) (FH-HH1). The area was affected by the 2004 tsunami and since then resettlement of some settlers had taken place.

“There are about 650 houses here. 400 have been resettled. ...about 250 hh were resettled immediately after the tsunami. Somewhere here, closed by... And that has been 9 years. And it has been 6 years since the new resettlement project has happened. Which means another 150 houses have been resettled...So the remaining 250 have not been resettled.” (FH-HH4)

The toilet facilities that are used by the settlers - the remaining 250 households - are either the ‘open’: the rocky shore by the sea, or the closest corporation toilet on the opposite side of the road, 0.75 - 2 km away. The nearby corporation toilet is only accessible between 6 am - 6 pm. Water is provided by Metrowater and stored in black tanks. There is no scarcity of water (FH-HH1), likely due to the fact that there are a decreasing number of people living in the settlement. Waste is disposed of in plastic bags by the sea, “sometimes the corporation trucks come and take it, or it just washes away with the sea” (FH-HH2).

Factors influencing sanitation practices at this location are the lack of adequate toilet facilities since the road expansion 4 years ago and the time restriction of available toilet facilities at the other side of the settlement. The settlers are supposed to be resettled but that has not yet taken place. In the meantime, for years, open defecation has been practiced, posing a risk to the greater (inner city!) environment. Since water is available there seems little restriction for drinking and hygiene practices, the waste management on the other hand appears not ideal as waste would pollute the living environment and get into the sea.

The characteristics of the participants interviewed at the fishing harbour settlement (Table 2) indicate that the six people interviewed were women, all of whom were mothers or grandmothers. Interviewees five and six were living in the resettlement area (where they had access to a private toilet facility (FH-HH5/6)), the others lived in the settlement near the fishing harbour.

Table 2: Fishing harbour interviewee characteristics; Source: Author.

Respondent	Gender	Origin	Age	Job
FH-HH1	Female	Lived here since childhood	48	Street seller
FH-HH2	Female	Pulicat (~50 km away), moved here 3 years ago	23	Housewife
FH-HH3	Female	Kalamandapam (3km away), living here since about 48 years	74	Former maidservant, now sowing
FH-HH4	Female	Born in Sivakasi (8h South), here since about 26 years	38	Housewife/ maidservant
FH-HH5	Female	From Kasimedu Kuppam, lived in resettlement area since 3 years	44	Selling vegetables
FH-HH6	Female	From Masthan temple area, Tondiarpet (Chennai neighbourhood), moved 6 years ago	68	Small stall vendor

Within the 2011 Extended City Limits: Excluding Men and People

Kottivakkam (KV) (7.2 km West of Velachery)

Kottivakkam is an area just bordering south of the old city boundaries and it thus lies well within the 2011 expanded city limits of Chennai city. There are big residential buildings, yet at the beach, smaller houses and huts are to be found. The beachside hutment community visited had a public toilet facility for women, cleaned daily by the corporation, however men defecate in the open (KV-HH1/2). The women are generally happy with the standard of the toilet facility, in terms of privacy and cleanliness, also it had a western style toilet, which is helpful for elderly women. It is only found scary when going alone at night. Yet it is found embarrassing when a woman has to go to the toilet in the evening, watched by men sitting by the beach, opposite the toilet (KV-HH8).

There are extra water taps and light available in the toilet. The men cope with the open, however for someone elderly it is more difficult. The residents have access to water via “one tap for water which is laid out by the

corporation. The tap is used by 50 households” (KV-HH1). Waste collectors pick up the waste in this area and the residents can put their waste into a container provided by the corporation (KV-HH1). “The discharge of the toilet is stored in a septic tank. The grey water (bathing, etc, washes into the sea)” (KV-HH5).

As waste and water seem to be managed satisfactorily the only issue appears to be the lack of toilet facility for men. The councillor of the locality was not available for an interview to comment on the situation. In this manner the men at this location living in households without private toilet facility are disadvantaged in their freedom for privacy and hygiene.

The table 3 below shows that six of the people spoken with in the Kottivakkam settlement are women and three are men. All apart from one participant have moved to this area, and the woman born here (KV-HH8) was living for some time at her husband’s area of origin, but returned because of better standards of living at this locality.

Table 3: Kottivakkam interviewee characteristics; Source: Author.

Respondent	Gender	Origin	Age	Job
KV-HH1	Female	Karnatur (3 hours away)	34	Sells fish
KV-HH2	Female	Moved from Thiruvanniyur (3 km away), 3 1/2 years ago	27	Housewife
KV-HH3	Female	Lives here since 30 years, moved from Adyar	57	Housewife
KV-I4	Male	Lives in Semmencherry (20 km away), works for corporation, born in Triplicane, moved to Semmencherry when married	60	Waste picker
KV-HH5	Male	Moved from Royapuram (central north part of Chennai) 40 years ago	65	Fisherman
KV-HH6	Male	Moved from Karaikudi (400km away), 15 years ago	70	Retired carpenter
KV-HH7	Female	From Karnatur (30 min away), moved here 15 years ago	35	Sells fish

KV-HH8	Female	Born and raised here, moved to husband's place (Madurantakam, 3 hours away) but returned as facilities are better here	28	Sells fish
--------	--------	--	----	------------

Thoraipakkam (TH)

The next locality discussed is a settlement in Thoraipakkam, which is about 7.6 km south of Velachery. Within the area there are large apartment blocks and houses visible. The community of settlers approached consisted of approximately 25 households, who live in hutments next to a state highway close to the Pallikaranai marshlands. The people interviewed stated to be living at this place between 7-18 years.

This settlement seems to be accessing water in two ways: for drinking they buy canned water, for everything else they use groundwater accessed through a hand pump (TH-HH1/2/3/4). The canned water they buy “(f)rom some firm, they bring the truck and they regularly sell” (TH-HH1). According to the counsellor, every house has 24/7 access to water taps. When he is asked why some people still buy canned water for drinking purposes if water taps have been provided, he responds: “We have provided clean, potable Metrowater. If they are buying canned water, it is due to their ignorance and lack of awareness about the facilities we are providing.” (TH-C). This indicates that when it comes to the provision of water the settlement is not of interest to the elected administration. Given that “some firm” (TH-HH1) provides them with canned drinking water however shows that the settlers are still acknowledged by some institutional mechanism - be it private business or a philanthropic enterprise. From the data gathered it is not clear who the institution selling the water is or who constructed the hand pump.

Three different methods of solid waste management emerge from speaking to the settlers:

“All the plastic and paper waste, she goes and sells it at the recycling store. There is a paper market, which takes all the old newspapers, for some money. All the food waste goes into the dustbin. Everyday there is a truck that comes to take the waste from the dustbin.” (TH-HH1)

“They incinerate all the waste.” (TH-HH2)

“Sometimes they incinerate, sometimes they put it in the dustbin.” (TH-HH3)

The first is recycling, the second is putting waste in the dustbin, the third is to incinerate it. From the fourth interviewee it is gathered that the waste collection for the entire stretch was only set up when the nearby Amma clinic was built. Before that she used to incinerate the waste. (TH-HH4). This indicates that before establishment of the adjacent health institution, the settlement was not on the radar of the corporation’s waste collection services. The counsellor confirms that “(a)ll the waste generated is collected by the Chennai Corporation trucks.” (TH-C) – this has been the case since the establishment of the health clinic but not before.

People of this settlement have no access to toilets, they practice open defecation, at two different places, separated by gender, but very close to the settlement. This indicates that the settlement is somewhat catered for in regards to water and waste, however the insanitary situation of open defecation poses a risk not only to the settlers but also to the larger community.

The characteristics of interviewees (Table 4) indicate that the four women spoken with in the Thoraipakkam settlement were all mothers. Three of the women had moved here, one was born in the area.

Table 4: Thoraipakkam interviewee characteristics; Source: Author.

Respondent	Gender	Origin	Age	Job
TH-HH1	Female	Born in the area	32	Housewife

TH-HH2	Female	Tiruvannamalai, pretty far, down south. Living here since marriage, 7 years ago	28	Maidservant
TH-HH3	Female	Born in Aruppukkottai, moved for work opportunities, 18 years ago	60	Retired maidservant
TH-HH4	Female	Lives here since 15 years, moved from Cheyal, 3h away, for job opportunities	34	Tailor

Greater Chennai - OD Practices in the Shadow of Industries

Sriperumbudur Settlements by the State Highway (SR)

The roadside settlements visited were located at a state highway, next to a lake. The four households interviewed have been living there between 10 to 20 years. Three of the households have moved from elsewhere, one household had local roots (SR). They are employed in housekeeping in a nearby industry (SR-HH1), work as *kuli* - daily wage labourers (SR-HH2), as an auto driver and selling snacks (SR-HH3), or one family's son worked as a technician in a local distillery and the father as a plumber (SR-HH4).

People settle at this locality as "in Sriperumbudur city, room rental is high. So some people migrated to this area. Because it is free rent. They built their own house" (SR-HH1). The land they live on comprises government land. They are aware that they run the risk of resettlement in case the government asks them to move, which is why, according to one respondent, no investment in toilet facilities is made. Yet the houses themselves are solid houses, having at least the walls build with cement, speaking for a certain degree of investment.

Also some of the bathing facilities visible were solid structures and one household had a hand pump, which would give them water for washing (SR-HH1). The other households either collect water from a nearby well (SR-HH2), the pond/lake (SR-HH3/4), or they use the water that the corporation tanker brings them (SR-HH4). For drinking purposes all households buy can

water: 25 Rs/ 20 litre (SR-HH3), or corporation water: “Tankers, by government. They have to pay for it. 35 liters per 5 Rs” (SR-HH4).

The waste is collected daily by a corporation van (SR-HH2). In this manner arrangements for water and solid waste disposal are in place, yet when it comes to human waste disposal, all household interviewed defecate in the open: women by the lake behind the houses, men somewhere else (SR). Only one member of the first household interviewed chooses to walk to the next public toilet about 1km away. For this she is to be accompanied by her husband as otherwise she does not feel safe (SR-HH1).

So it can be seen that the defecation facilities available to them are either nature, or a public toilet about 1 km away. Out of the 9 people engaged in the interview process at this locality, 8 would defecate in the open. This indicates an avoidable prevalence of pathogens in the area, posing a risk to human well-being and security. Factors influencing the unhygienic behaviour are the perception that building a toilet would not be worth it, since the houses are not owned by the settlers, as well as that people have been defecating in the open for all their lives (SR-HH4).

Table 5 shows the interviewee characteristics of the Sriperumbudur Roadside settlement visited. Male and female participants were engaged. It appears the settlement exists since about 20 years.

Table 5: Sriperumbudur Roadside interviewee characteristics; Source: Author.

Respondent	Gender	Origin	Age	Job
SR-HH1	Female	Southern Tamil Nadu, 500 km away, here since 10 years	29	Housewife
	Male	(father of respondent)	53	Owner of tea stall
	Female	(mother of respondent)	40 ⁴¹	
SR-HH2	Female	Thiruvallur district, here since 15 years because of	33	Housewife

⁴¹ The respondent was joined by her parents during the interview process. It appears that her mother's age is an estimate

		employment opportunities		
SR-HH3	Male	Kancheepuram, living here since 20 years	28	Auto driver/ food stall
SR-HH4	Male	Born in area	21	Technician of local distillery
	Male	(Parents of respondent stated to be living here over 18 years, mother is from Sriperumbudur)	46	Plumber
	Female		42	housewife

The following section is covering the village visited close to Sriperumbudur.

Sriperumbudur - Peri-urban Village (SN)

On the state highway from Sriperumbudur to Mudichur there are settlements and villages to be found. At this locality, drinking water is provided weekly by the corporation tankers, water for other purposes is now provided by pipe on alternate days, before they would get it from the pond. (SN-HH3/4). The waste is either used for farmland if it is compostable; plastic is given to recycling; other waste is burnt or otherwise thrown out (SN-HH1). The village constituted a typical peri-urban setting with sizable concrete houses, smaller concrete houses and huts. Equally there is a mix between septic tank toilet facilities and open defecation. Most of the settlers interviewed have been living in this area all their lives.

Out of the eight interviews conducted, four households admitted to defecating in the open (SN-HH1/3/4/5). The household members interviewed earn a living by being a housekeeping assistant (SN-HH1), engaged in industrial housekeeping (SN-HH3), an assembly line operator (SN-HH4), a storage loader (SN-HH5). They have “no toilet facilities at all, use a place by a lake, about 50m away from their hut” (SN-HH1). From these four households alone there are at least 17 people that are stated to defecate in the open, at places maybe 50m away from the village. One interviewee offered some indication of the population toilet ratio of the village:

“Total 250 houses around, 100 have a toilet, the rest does not have” (SN-HH8).

Hence, 60% (150) of the households in this area do not have adequate sanitation facilities. This poses a great health and safety risk, especially as the area is becoming more and more populated. Reasons for the defecation practices taking place here are essentially poverty, since settlers who are better off, have gradually been investing in toilet facilities (SN-HH5), while others express the wish to do so (SN-HH4).

The table 6 below shows the interviewee characteristics of this settlement. There is a mix of men and women interviewed, with a majority of men which had to do with the availability of participants to speak to in this conveniently sampled study. Most of the interviewees are born in the area and engage in the nearby industries.

Table 6: Sriperumbudur Village interviewee characteristics; Source: Author.

Respondent	Gender	Origin	Age	Job
SN-HH1	Male	Born in the area	43	Housekeeping assistant
SN-HH2	Female	Born in area	31	Company housekeeper
SN-HH3	Female	Born in area	40	Industrial housekeeping
SN-HH4	Male	Born in the area	30	Factory assembly line operator
SN-HH5	Male	Born in the area	18-20 ⁴²	Store loader
SN-HH6	Male	Tuticorin (overnight journey from here), in area since 3 months	45	English Professor
SN-HH7	Male	Born in area	38	Electrician and plumber
SN-HH8	Male	n/a	68	Former councillor, now in real estates

⁴² Interviewee was not asked for age as he was one of the bystanders during a previous interview, yet he was very keen to contribute.

Three Dimensions of Sanitation in the OD Settlements

From the above a preliminary assessment of the sanitation situation in the five different locations can be made.

Table 7: Three dimensions of sanitation in the OD settlements; Source: Author.

	Fishing harbour	Kottivakkam	Thoraipakkam	Sriperumbudur Roadside	Sriperumbudur Village
Human waste disposal	OD & Public toilet	OD & Public toilet	OD	OD & Public toilet	OD & private toilets
Water	Metrowater, black tanks	Water tap / 50 hh	Hand pump; canned water from truck	Hand pump, well; lake; canned water from truck	Corporation water; bore well water; pond
Solid waste	Thrown by sea, picked by corporation workers	Waste collectors, corporation bin	Corporation truck	Corporation truck	Biodegradable waste; plastic given to recycling; incinerated; dumped

At the locations where public toilets are available, these are accessible given some restrictions, such as only women can access it, only accessible during daytime, and/or some distance away. Such restrictions contribute to the fact that a large part of the population at these locations is practicing OD. This shows that the very poor and marginalized in the city as well as in the peri-urban areas still need to rely on open defecation as a practice for human waste disposal.

4.2.2 Use of Public Toilets

At three of the ten locations visited the respondents state to be using public toilets. It appears that the situation is manageable, yet restricting in social and economic freedoms. One location where public toilets were found is settlements close to the Marina beach, near the lighthouse station of the Mass Rapid Transit System (MRTS).

Lighthouse Settlements (MRTS station, Nadukuppam/ Neelam Basha Dargah) (LH) (13.6 km North of Velachery)

The settlement area here is centrally in the city, close to Marina beach, and inhabited by fisher folk or other members of the scheduled caste. At the beginning of the road there is a mix between brick houses and shanties, and the later interviews took place a kilometre along the road in an area where shanties dominate, making this area appear poor and neglected. One respondent says that “there is a canal out there which is not properly maintained, it is very dirty, they call it the dirtiest place in Chennai.” (LH-HH1a), which speaks somewhat of public neglect and unhygienic living conditions, right in the city centre.

In the first part of the area waste is picked up by the corporation, water is accessible at a well filled by pipe by Metrowater (LH-HH3). Some people use this water as drinking water (LH-HH3), others buy canned water for drinking (LH-HH1a). The area has a mix between households who have a toilet (for instance one toilet seat shared between 20 members of a joint family) and households with no toilet. The public toilet is voluntarily cleaned by a member of the community and accessible from 5 am to 10 pm (LH-HH6). The toilet is perceived to be clean, private (as compartments have doors), and convenient for the people living close by (LH- HH2), not so convenient for those living further away (LH-HH6). It can be seen that while waste and water seem to be catered for, the public toilet facilities imply restrictions on the settlers living in the area.

Such restrictions are of economic nature, as well as in regards to a person's social freedoms and well-being. For instance, one man (LH-HH5) "feels he needs his own toilet. But he is using public toilet. Even though it is a public toilet it is maintained by community. Many people don't have electricity, so they need to live how they can. It is evident that because of being dependant on public facilities he is incurring loss but he can't help it." And the feeling of helplessness also comes across in the response of a woman living further away from the public toilet, who "says it is difficult to use it but we have no other means, so we have to use it." (LH-HH6). Another woman states that she uses "the public toilet which is 1 km away. The cleanliness is ok. One can't expect much. It is very smelly sometimes and not very convenient, which means they feel helpless but they don't have any other choice." (LH-HH9). Thus the feeling of helplessness and lack of choice restricts the settlers' income earning capabilities and hampers their well-being.

The livelihood situation of settlers seems even less stable further along the road, close to the 'dirty' canal. The settlers here bring their waste to the corporation bins and they all access water from the hand pump 500 m away (LH-HH9), which implies carrying the water back to the hut, requiring manual labour. One respondent living nearby the canal tells how she has been moving around in this area:

"She's been living here for 20 years. Before, she lived in vicinity. She was living in a house similar to this one here (a hut), but government took away their places so she came over here. There is a canal running behind the huts. That was the case in her old place too. Government wanted to move the huts away from the canal that's why she moved here" (LH-HH8).

This indicates how external influences (here: the government) impact on the livelihoods of the settlers. The stress and hardship of being forced to move and the uncertainty of whether she could stay certainly does come at a cost, additionally to the reliance on a public toilet facility for the private act of disposing human waste.

The characteristics of interviewees in table 8 show that in this settlement people largely are locally born. The employment of the men also highlights some caste division, from those who catch fish to those who cut fish. Two interviewees were men, seven women.

Table 8: Lighthouse interviewee characteristics; Source: Author.

Respondent	Gender	Origin	Age	Job
LH-HH1a	Male	Born in the area	27	Fisherman
LH-HH2	Female	Lives here since 35 years, comes from vicinity	45	Housewife/ voluntarily cleaning public toilet
LH-HH3	Female	Born in the area	42	Sells fish
LH-HH4	Female	n/a	70	n/a
LH-HH5	Male	Born in the area	44	Cutting fish
LH-HH1b	Female	Living here all her life	75	n/a
LH-HH6	Female	Born in the area	55	Teashop owner
LH-HH7	Female	Born in the area	45	Small food stall
LH-HH8	Female	Living here since 20 years, born in vicinity	52	No fixed employment, on demand cleaner
LH-HH9	Female	Birthplace around 10km away, living here since 35 years	50	Sells fish

The above spoke about settlements of members of the scheduled caste at the heart of the city, the next section touches on a settlement area in Asarkana, where settlers are living in hutments on Cantonment land.

Alandur – Asarkana (AL)

Asarkana in Alandur, 4.5 km North-West of Velachery, is Cantonment land, meaning that government services do not operate here. It is a settlement area in which a dominant occupation among the residents appeared to be related to butchering. The hutments of interest are small structures adjacent to larger apartment blocks. Over the years settlers have

upgraded their hutments into houses: “all the huge concrete houses, outside, were all once huts. They have been demolished and raised up as structures” (AL-HH3). Some 35 households living around the area of the interviews access a water tap through which the corporation provides drinking water. Water for bathing and cleaning is provided through a hand pump, accessed by 20-30 households (AL-HH2). Solid waste in this area is collected daily by the corporation (AL-HH2/3).

A public toilet block is right at the beginning of the settlement area. The public toilet is cleaned on alternate days (AL-HH1). It is never locked (AL-HH2), but there is no running water inside so users need to carry a bucket of water. A woman using the public toilet says that “(t)hey do feel scared to use it at night because there are people who are drunk, men, who come here and break the bulbs. So the bulbs function not all the time. So they don’t feel safe using it at night.” (AL-HH1). A man states that men are comfortable to use it at night (AL-HH2). Out of the five conveniently sampled interviewees, two household were using the public toilet, while three households had a private toilet structure. The two households using the public toilets have both made attempts of building a private toilet structure, but in case of one household the hut itself was too small and the structure built not big enough, so the residents prefer the public toilet (AL-HH1). In the other case the household has a urinal, but not enough funds to build a whole toilet (AL-HH2). From the data gathered it is not clear where the wastewater of the urinal is disposed of.

The other households with a private toilet structure have all only recently upgraded their toilet facilities (AL-HH3/4/5). Reasons cited for constructing it are: a dislike of the public toilets by the children of the family (AL-HH3); a dislike of poor hygiene at the public toilet (AL-HH4); or safety issues of women who prior to having the private toilet also would defecate in the open (AL-HH5). The households had constructed the toilets by means of their own funds, for instance through getting a loan from their workplace (AL-HH4). It appears that even though the residents are aware that they live on Cantonment land and may have to move if the military asks them to (AL-

HH5), the residents found it worthwhile to invest in toilet facilities, unlike the settlers at the Sriperumbudur roadside, who also intermittently dwell on the land. Yet maybe this is because at the outskirts of Sriperumbudur town they have a greater feeling of privacy as the area is less densely populated compared to inner city Alandur.

The table 9 below shows an overview of the interviewee characteristics of the people spoken with in the settlement on cantonment land in Alandur. All interviewees were born in the area. Here one male and four female people were spoken to.

Table 9: Alandur interviewee characteristics; Source: Author.

Respondent	Gender	Origin	Age	Job
AL-HH1	Female	Born in the area	40	Housewife
AL-HH2	Male	Born in the area	About 40 ⁴³	Works at butcher shop
AL-HH3	Female	Born in the area	30	Owns small stall selling food stuff, grocery
AL-HH4	Female	Born in the area	50	Until 5 years ago employment in leather company, now housewife
AL-HH5	Female	Born in the area	40	Housewife

The following section addresses some part of Madipakkam, lying also within the 2011 extended city boundary.

Madipakkam (MA)

Madipakkam is a suburb 3.1 km away from Velachery. This vast slum area is said to be famous for some “rag to riches stories” (MA). Some 20

⁴³ Interview started with daughter but as she is not living here but merely visiting, the focus of the interview was on her father who was not asked for his age

years ago, the particular area visited had been allocated for people living in Mylapore who had to move because of the construction of the Mylapore railway station (MA-HH3). About 80% of houses in this area were solid houses. About 10 days before this location was visited for the purpose of this research, some people had come to conduct an official survey of toilet facilities available to the households, which is supposed to provide more toilets to households. Yet this initiative seemed limited to brick houses, whereas people living in a hutment cannot have a toilet installed inside (MA-HH2).

On entering the area a littered canal was visible, as well as a public toilet facility. Water is brought to the settlers either by the Metrowater tankers or via tabs available in some streets. Waste is dumped in containers in the street, which are emptied by the corporation. The settlers “only have a problem regarding the disposal of liquid waste. Like washing clothes and utensils... they just take the water and pour it down the street, let it run down the street. Because there is no proper disposal mechanism” (MA-HH2). The public toilet facilities of an area here are cleaned every day, hence the toilets are perceived convenient, private (door), and clean. However the facility has no working light as electric cables are diverted and electricity stolen, and it has no running water for washing. Further some security concerns were stated in regards to using the toilet at night, as there is a problem with stray dogs, one member of the respondents family has been bitten by a dog (MA-HH2).

Hence it seems that even though a functioning and accessible public toilet reduces the risk of pathogens released in the area, the psychological restrictions posed upon the users through requiring to dispose of human waste at a public space and not within the safety of one’s home can affect their well-being and social or economic capabilities.

The characteristics of interviewees in the table below (Table 10) show that all people spoken to were not originally from Madipakkam. As shown before this is an area that emerged around 1991 because of road access and available land. This fits with the narratives of the interviewees, three of which

arrived here around 20 years ago. The interview process engaged with four women one man.

Table 10: Madipakkam interviewee characteristics; Source: Author.

Respondent	Gender	Origin	Age	Job
MA-HH1	Female	Moved here from Mylapore 24 years ago	About 60 ⁴⁴	Retired maid servant
MA-HH2	Female	Lives here since 14 years, from Arany (ca. 150 km away)	About 40 ⁴⁵	Street sweeper Chennai corporation
MA-HH3	Female	Born and raised in Adyar, married to Mylapore, relocated her 20 years ago	45	Housewife
MA-HH4	Female	Lives here since 18 years, from Adyar	44	Tailor
MA-HH5	Male	Moved here 38 years ago from Mylapore	68	Retired watchman for a house

Having discussed some insights from the sanitation conditions and the use of public toilets within the greater Chennai region, the next section is to touch on some insights from locations of shared and private toilet facilities.

4.2.3 Shared and Private Toilets

Perungui Medu, Kallu Kuttai Lake (PM)

This settlement was not easily accessible as the roads were non-concrete. The settlers have water brought to them by large Metrowater

⁴⁴ Interviewee did not remember her age

⁴⁵ Interview process started with daughter but as she was under age, the interview was conducted with the mother, however her age was not asked.

tankers and stored in tanks at each street, it is “used by 15 families, (and) filled up every 2nd day” (PM-HH1). Some settlers (PM-HH3/4), who do not have a water tank, “buy water from the shop for Rs 5 per can for drinking, cooking and bathing and water in their well is only for toilet. She spends 30-35 rs every day for water.” (PM-HH3). Waste is dumped in the lake (PM-HH1) or behind the house (PM-HH4), as “Chennai Corporation doesn’t come here on a regular basis” (PM-HH5) to pick up the waste. Household five mentions that they separate the waste according to what can get decomposed, what would be picked up by waste pickers, and the remaining he burns (PM-HH5).

The sanitation realities in terms of toilet access here are that if households did not have a toilet of their own, they would be sharing a toilet facility with other households, at the most four households would share one toilet (PM-HH5). The toilet facilities are connected to septic tanks. At this location five households were interviewed. Household one, two and five had their personal toilet facility in their house (PM-HH1/2/5). Household three shares the toilet and bathing facilities with their neighbours, though they “are very close, see themselves as one family” (PM-HH3). Their septic tank and toilet facility has been provided by the landowners (the residents live here on rent), and the “Chennai corporation comes to clean the tank” (PM-HH3).

One household states that it is three families who together share a toilet facility. “They are comfortable using the toilet and they clean up after themselves. As it is right next to their house they feel comfortable using it” (PM-HH4). Also, some families pool a bit of money and hire poor corporation toilet cleaners to clean the shared toilet for them. (PM-HH5)

It can be seen that in this location, pathogens stemming from open defecation do not seem to be the immediate problem, rather some toxins released through degenerating or burned waste may enter the environment.

Table 11 below, listing the interviewee characteristics for this location highlights that none of the people interviewed were originally from this area.

In fact, as mentioned before, this area only emerged as a populated area since 2001.

Table 11: Perungudi interviewee characteristics; Source: Author.

Respondent	Gender	Origin	Age	Job
PM-HH1	Female	Living here since 1 year, moved from Murdukudai district	26	Teacher/presently staying at home, child rearing
PM-HH2	Female	“came here at 15, left for home in Kanchipuram for 4 years, ... came back to Chennai because married to husband”	30	Housewife
PM-HH3	Female	Living here for 4 years, moved from Mylapore (area in central south Chennai)	42	House cleaner on call
PM-HH4	Female	Originally from KK Nagar, (20 km away)	70	Retired, did household work
PM-HH5	Male	Lived in the Taramani area (20 min away) before. Moved here 20 years ago.	43	Social worker/ human rights and anti-corruption bureau

Mudichur (MU)

Mudichur is about 21.4 km away from Velachery. What has become evident through interviews here is that there is some sort of backward migration from the areas closer to the centre of the city in outward direction.

For instance households indicating their move from Tambaram to Mudichur (MU-HH1/3/4) or from Saidapet to Mudichur (MU-HH5).

The town has been declared open defecation free in 2008: according to a times of India article (Madhavan 2008), “(t)he panchayat ... set up individual toilets in 600 households under the 2007-08 total sanitation programme, thereby ensuring that all 2,400 households in the village had sanitation facilities”. All interviewees had access to water, either from the tab exclusively (MU-HH2/3/4), or from a bore well and tab (MU-HH1/5). All interviewees had access to a waste collection scheme.

It appears that this panchayat, as external factor of influence on the sanitation situation, has a functioning sanitation system in place. Yet there is evidence that some settlers would allow their children to defecate in the open (MU-HH3), leading to release of pathogens in the area. Further, evidence was gathered stating that settlers living in Mudichur but working somewhere in the outdoors, also have to revert to open defecation while at their workplace (MU-HH1/3). Hence the availability of toilet facilities at outdoor workplaces of people also determine the person’s freedom of well-being.

Below in Table 12 are the interviewee characteristics listed for the participants engaged with in Mudichur. Again, none of the participants is original from this area. Four women and one man participated in the interview process.

Table 12: Mudichur interviewee characteristics; Source: Author.

Respondent	Gender	Origin	Age	Job
MU-HH1	Female	Living here 14-15 years, from Tambaram (7km away)	48/30 ⁴⁶	Housekeeping/selling snacks at toll station
MU-HH2	Female	From Chengalore (10-15km away), lives here about 50 years	70	Retired agricultural field worker
MU-HH3	Female	Kovilambakkam (30 km	45	Non-contract

⁴⁶ Interview process started with one but ended up involving 2 women, mother and daughter

		South), married to Tambaram, moved here 4 years ago		construction worker
MU-HH4	Female	Came here since 24 years from Tambaram, lived there 5 years, originally from Pondicherry	56	Maid servant
MU-HH5	Male	Living here 12-13 years, from Saidapet, originally from southern Tamil Nadu	66	Polishes vessels

4.2.4 Discussion

The evidence from the 10 locations has drawn a varying picture of sanitation access and realities among the poor in the Chennai Metropolitan region. What becomes clear is that the poor people at the margin of society are forgotten and left behind, and in this manner not only live themselves in undignified conditions, but also endanger the larger community.

This is the case in the fishing harbour settlements, where settlers for years - since the public toilet demolition several years back - are being overlooked by a resettlement scheme resulting in open defecation.

In the Kottivakkam settlement visited, it is the men without private toilet facility that are disadvantaged. While the women are happy with a 'clean' public toilet, men have to defecate in the open, spreading pathogens and thus endangering all people in the area.

Within the roadside settlement in Thoraipakkam people appear to be overlooked and since they were previously pushed aside for the highway construction, their livelihoods do not seem to matter to public agents, who similarly overlook the fact that pathogens stemming from open defecation, pose a threat to public security.

Settlers nearby the state highway at Sriperumbudur defecate in the open, as toilet facilities are not perceived as priority, neither by the settlers themselves nor by government who allows the people to live on their land. This public blind eye endangers not only the settlers but also the larger community.

In the village near Sriperumbudur a clear trend is visible: having a toilet becomes a statement of economic standing and as long as the poor cannot afford to build facilities, the threat of the pathogens in the larger area prevails. This trend of upgrading when economically feasible is also the case in the settlement visited in the Asharkana area of Alandur. Difference here, apart from the advanced degree of urbanisation compared to the Sriperumbudur village, is that the land is Cantonment land, making public services limited, and that a public toilet is available.

While members of the scheduled caste living around the Lighthouse MRTS area have the choice of using a public toilet, the choice is a restricted one - to certain times during the day, and amid the hassle that not readily having access to a toilet facility brings with it, for instance when one needs to walk one kilometre first.

The area visited in Madipakkam is interesting because while there are public toilets available, the local administration is also looking into equipping households with private toilet facilities. To what extent this works in future is to be seen.

As such the settlement in Perungudi showed an ideal scenario of human waste management, with families readily sharing a private toilet facility. Yet, what stands out here is the fact that solid waste management is not catered for and waste is accumulating behind the hutments in a lake area.

And then there is Mudichur. It is exemplary for liquid and solid waste management in the region, yet when speaking to some settlers, not only are they still practicing OD at their workplaces, but also they allow children to

defecate in the open, leading to a continuation of spread pathogens in OD free Mudichur. This highlights the importance of not only the physical structures of toilet facilities, but also awareness creation that is comprehensively and leaves no one behind. Further, while the villagers seem mostly to have access to hygienic toilet facilities connected to septic tanks, the fecal sludge pumped out of the tanks is disposed of at some inhabited place, making it still a danger for surrounding settlers as pathogens can travel.

4.2.5 Conclusion

This chapter's aim was to give an indication of the dimensions of the fieldwork conducted as well as the findings. It laid out how settlers normally practice OD within different areas of greater Chennai – the areas showed different degrees of urbanisation. What is clear, and fits into the theme of the Sustainable Development Goals of 'Leaving no one behind' is that within Chennai city and the greater Chennai region there are citizens who, in the light of human waste disposal facilities, are left behind, forgotten and overlooked.

The following section (chapter 4.3) provides a more in depth exploration of the findings as well as some analysis that seeks to operationalize the capability approach. This is to take place through revisiting the narratives of participants in the light of specific themes.

4.3 Valuing Freedoms for Human Waste Disposal

4.3.1 Introduction

Central to the research is the assessment to what extent the poor and marginalised find themselves in a position to live a meaningful life, especially in regards to their preserving their dignity when it comes to human waste disposal. Such answers the second research question seeking to assess the dimensions of psychological and agency freedoms of people in contexts of sanitation poverty. This is why the interviews explored the following dimensions: importance of access to toilet, cleanliness, safety, convenience and privacy of toilet option used, and feeling of control over personal space and needs.

To present the findings, this chapter starts with the accounts gathered on the importance of toilet access to the settlers, and then focuses on the interviews of individuals who stated to defecate in the open, as they are the most vulnerable in their capacity of leading a dignified life.

To make sense of the data collected and according to the way in which it was gathered this chapter presents the findings comparing different case studies. These case studies are:

- The marginalized and overlooked: a roadside settlement in Thoraipakkam
- Of limited choices and being left behind: settlers by the Fishing Harbour
- Inequality and shame - settlement in Kottivakkam
- Street workers and the public toilet dilemma
- Integration and outreach - Sriperumbudur Settlements

The chapter proceeds by analysing the different case studies, each of which closes with a capability ranking of the (un)freedoms of the settlers in regards to their option for defecation.

The chapter concludes by stating the key message each case study offers, and by indicating the usefulness of asking individuals to evaluate their situation.

4.3.2 Importance of Access to a Toilet

I don't have a toilet, so how can I even talk about the comforts of having a toilet." (FH-HH1)

Some settlements, those that were visited at a later point in time during the fieldwork, have been asked to evaluate the importance of having access to toilet facilities, and some also on the impact on personal well-being it can have. In total 19 people, including 2 councillors, have been asked and the answer has been unanimous: very important (e.g. MA-HH1, FH-HH4), especially in case of emergencies such as diarrhoea (AL-HH4/ MA-HH2/4/5), and some households stated as the reason for building their private toilet the 'necessity' for such, since children are "of a certain age" (MA-HH3), or because of their daughter and daughter in law (AL-HH5). This highlights some sense of shame and need for privacy, if one may not be able to admit the need for oneself, then for others, whom one wishes to protect.

Some of the respondents have access to a private or public toilet, but others have neither. A 70 year old man responded that the access to a toilet facility is very important especially given that he is old. Access to a toilet definitely impacts personal well-being he says, and he finds it very inconvenient to defecate in the open: at a place reached by "10 min of walking. By the sea or maybe some open space." (KV-HH6). Further he states that "(h)e does not have control over his needs and personal space. Because given that he is old he needs some other kind of support, but he does not have it" (KV-HH6). A 35 year old woman, who has access to a public toilet, states that access to toilet facilities is very important in case "I have some stomach problem or if there was a person without a hand... it would be very difficult" to not have adequate access, and in this manner access to a toilet "definitely impacts personal well-being, it would be much

easier if they had a toilet at home” (KV-HH7). Another interviewee says that easy access to a toilet “is very important, especially now that she is sick, it is hard for her to even get up and do anything, or even sit up straight, so in that situation it is very difficult” (KV-HH8). In this sense the access to a toilet facility “definitely impacts (personal well-being), and that their life would be much better if they had a toilet. She says that she had TB and wheezing so she couldn’t even get up and some of her body had become somewhat ‘rusted’. So she couldn’t wake up. So her parents had to come and help out. So she did her toilet wherever she was sitting or sleeping” (KV-HH8). These answers all highlight that adequate access to a toilet is the more important when a person is more vulnerable due to age-related lack of flexibility, special needs or illness.

One interviewee highlights a family dimension by stating that “given that I have a child and also old in-laws, it is very important to have a toilet, but I don’t have. She says, her father in law was here for a while, but given that there is no toilet it was very difficult for him and hence he has gone back to his home” (FH-HH2). This shows the restrictions she has to live with as her parents in law are not comfortable staying with her, as they choose to stay where they have easy access to a toilet, which makes her family’s situation more difficult as distance in between family members may imply added difficulty in assisting each other or take away some emotional value of the family life.

One woman who is in her mid-seventies, states that “(i)t is very important, and it would have been very happy for me to have a toilet, but I don’t have one because I am living alone. (Her reasoning is that because it is only her, it wouldn’t make sense to build one)” (FH-HH3). This answer shows the limits in freedom she feels because she is living by herself: alone she seems to not feel important enough to have a toilet.

For settlers at one roadside settlement

a “toilet is the only important thing in the house. We don’t want anything else. She says in case I have to do it very urgently or in

case I have a stomach problem or things like that, ... she says the only option to do it is there, behind, but that's where the men are also working, in the construction, you can see the construction going on, very close by. So she says ... she can't do anything. And she even can't do it here in the front because it is an open road. Everyone can see." (TH-HH2).

From the quote above, it can be seen that the interviewee finds a toilet of utmost importance. She describes the urgency that can be caused by the need to defecate; the discomfort caused by lack of privacy given their option to defecate; and the helplessness associated with her lack of choice. Also, access to a toilet would be very important, particularly because they "don't have access to electricity", and their toilet space - an open space - is overseen by a construction site (TH-HH1). These answers indicate the emotional difficulty the settlers have to deal with when they need to engage in the fundamentally human, but private and personal act of defecating. It appears that having to perform said act in the open is a degrading and humiliating experience to the settlers. This goes in line with the answer of one interviewee giving an indication about her perceived social standing:

"The very fact that we are struggling to have a toilet shows how important we feel a toilet is at home. Even we are humans, we also need toilets." (TH-HH3).

It shows that she feels to be part of a group of people who are neglected or marginalized and perhaps 'forgotten' to be human. One can only imagine the precarious situation these people are often exposed to, given that they face the search for an appropriate place to defecate on a daily basis.

The fact that all participants interviewed think it important to have a toilet but do not readily have access to one shows the deprivation some face in terms of the gap between ideal scenario and reality, which means their sense of self-worth is likely to be diminished. The psychological harm done by fear, shame and discomfort would further add to a confined worth of self.

Therefore it can be summarized that the responses of the settlers show that limited or no access to a toilet

- Impacts personal well-being
- Restricts social ties
- Is the more precarious if a person is ill, immobile or otherwise restricted

These points are all indicative for how inadequate access to toilet facilities impacts human well-being. In the following this chapter is to analyze the different dimensions of freedoms that might be impaired or restricted by the limited choice for defecation. It does so by looking at the different locations where open defecation is practiced.

4.3.3 Assessment of Freedoms when Open Defecation is the Norm

When looking at the different locations where open defecation is practiced, different functionings (or the lack thereof) are explored. For this five different locations/scenarios serve as case studies. These case studies are each to convey a distinct meaning. The first will speak of a settlement that is marginalized and overlooked. The second will speak about settlers' difficult choices and being forgotten. The third case study will draw a picture of inequality, while the fourth case study highlights the dilemma of missing public toilets. The fifth study makes a case for outreach and integration.

As a method to evaluate the degree of (un)freedom or capability, this research employs a simple tool analysing the 'discourse' provided by the interviewees in response to explorative, open-ended questions. What this means is that interviewees could choose how to answer the question and following from this is that the themes explored in the different settings have some similarity but the answers have a fair degree of variation. Hence the

themes presented at each location may be different, and not all respondents provide a value to each theme – the table serves to summarize the data provided, it did not pre-empt such.

To ‘measure’ expressed feelings or perceptions a numerical value is assigned to the statements given by the interviewee: when a person expresses to be indifferent about the choice of ‘toilet facility’ she has, her capability value (CV) is 0. When a person dislikes the choice, the value is -1. An emphasized dislike gets the value -2. Where no clear value statement is made, no value is assigned. Such way of measurement is applied to all five case studies discussed here, and the different values are listed in a table after each case study. This is meant to help guide the reader through the different scenarios and issues explored.

A concluding section summarizes the key findings, and argues for the significance of the evaluation method employed in the analysis.

The Marginalized and Overlooked: a Roadside Settlement in Thoraipakkam

The first settlement looked at is the roadside settlement in Thoraipakkam. In this settlement there is only one option for defecation, as all settlers have to defecate in the open, at places nearby.

Physical and Emotional Safety

It is a fundamental human right to have freedom from fear. This section evaluates the responses of the settlers in regard to the feeling of safety they have when it comes to the daily need of human waste disposal.

“She says it is not scary, even though there are snakes and all of that, but she says, you know, we are used to it by now, so we’re immune to all of these things, so we just have to do it and come back.” (TH-HH1).

(CV: 0)

While this interviewee does not feel scared, her answer shows the limits of choice and freedom she has in regards to her defecation options. It is evident that it makes her feel very bad, she is calm and looks sad when speaking about it. Her expression of 'being used to it' indicates an emotional indifference, which is not ideal as it is the result of repeated demeaning situations, and a coping mechanism to such.

Another interviewee expresses that :

"At night they see snakes, and also the light is a problem. She says snakes have entered their house, about 15 feet long snakes... Have come to the house... (s)he is definitely scared because of the snakes. The snakes come into the house to the rat trap, because snakes eat rats, and so naturally they find... there are also rats in the house. Snakes come in to eat the rats. But she says in the toilet area, the open space, there are snakes. She is scared of them"(TH-HH2).

(CV: -1)

Hence, for this interviewee the light and the snakes pose a problem and a threat to her emotional safety when she has to defecate at night. This gives not only an insight into the fears she faces when defecating in the open, but also into her living conditions and the fears arising from such.

A third interviewee answers the question about safety with the statement that

"even if I'm scared I can't do anything about it. She says it is very difficult, especially after the heart attack, she can't move as quickly as she could before. But even if it is hard, she has to do it there." (TH-HH3).

(CV: -2)

This again is indicative for emotional indifference as coping mechanism, which is restricting personal freedom and wellbeing. This

interviewee faces additional hardship due to her health condition and is hence in a position making her particularly vulnerable. A different interviewee's statement confirms the narrative as she also uses the open space behind the settlement for defecation and she feels that "(s)he is scared, but she has to use it, and at night she uses a torchlight for safety." (TH-HH4). (CV: -1). Thus it can be seen that all interviewees are not free from fear when disposing of human waste. And while the aspect of psychological safety is covered in the responses given by the interviewees, the aspect of physical safety is only marginally touched by the participant with a health impairment. Yet the respondents seem unaware of the very real threat stemming from open defecation which sees dangerous pathogens released into the settler's immediate environment. This poses a danger to human security.

Vulnerability during Menstruation

Women of childbearing age have a monthly period when they are particularly sensitive to a need for hygiene, which insanitary conditions may not give. One interviewee states that when she is menstruating, "they have to use it there, so she says it is very difficult". (TH-HH1). (CV: -2). The answer from another interviewee on the issue of how she manages when she has her menstruation is that: "on those three days she has to go to work, for income, and there she can use the public toilet, as in the house where she works in has several people working for them, so they built a toilet just for those people." (TH-HH2). This indicates that while the latter interviewee has to go to work, at least she can use the toilet there, whereas at home the only option is the open, which is very challenging, according to the first interviewee. The fourth interviewee says that "(s)ince she does not go out to work she stays at home and she manages. But even then she has to use the open space." (TH-HH4). This respondent's emphasis is on the fact that not having to engage in work during menstruation is somewhat of a relief but using the open for sanitation purposes is difficult. The research only confirmed the prevalence of difficulty for women to deal with menstrual hygiene, yet it did not touch upon the particulars of it, for instance whether

the women had the freedom to wash and dry the cloths used to catch the menstrual blood in a safe manner. On a different note, the research asked about general lack of cleanliness and convenience of the defecation area, which is depicted below.

Cleanliness and Convenience:

The interviewees agree that the space used for defecation is neither clean nor convenient. (TH-HH1/2/3/4). (CV: -1). To the question how one interviewee washes and manages to keep clean she replies that “(t)hey have to carry a bucket of water, when they have to use the toilet, but she says that there is a bathing space there, you can see that small structure there, they bathe there” (TH-HH1). The bathing space is the quadratic structure made up of asbestos walls. From this it can further be seen the discomfort which would be derived from having to carry a bucket of water and to wash in the open after defecating. A shortcoming of the data gathered is that it did not go into detail with regards to hygiene and whether individuals had access to washing their hands with soap after defecation, which is an important factor in the control of pathogens. The next section covers the question to what extent individuals feel to be having a sense of privacy and in that manner freedom from fear of embarrassment and emotional hurt.

Sense of Privacy, Control over Personal Space and Needs

All interviewees do not have a sense of privacy when disposing of human waste (TH-HH1/2/3/4) (CV: -1). For instance, one interviewee states that in using the open space she has “no sense of privacy, people from the houses behind will all sometimes see, but they cannot mind that, she says. Even if they do mind it, they don’t take it much to their heart, because they don’t have the facilities” (TH-HH1) of defecating in private. This is again indicative for an undesirable emotional indifference and lack of choice. Also she says that she does not have control over her personal space (TH-HH1), which curtails her freedom for well-being. The response of another interviewee adds to the narrative by saying that she has “no control over her private space, given that it is an open field. Everyone has to do it... if a man

would come it is really embarrassing.” (TH-HH2). (CV: -2). This indicates her lack of freedom from fear or embarrassment. And when interviewee four is prompted on her sense of privacy she expresses that “people do peep and things like that. So where is the question of privacy. But they are scared, they just walk back after using it. They just rush, do it and come back.” (TH-HH4). She also feels that “(t)here is no control over personal space. And hence the embarrassment” (TH-HH4) she is subjected to. (CV: -1). The lack of control over personal space, needs and privacy, is humiliating and an emotionally restricting experience which inhibits the mental freedom to self-respect, confidence, and eats away at an individual’s well-being. To the latter the participants were also prompted as can be seen in the following.

Personal Wellbeing

On whether or not having a toilet impacts her personal wellbeing one interviewee states that “it is hard” (TH-HH3) (CV: -1) and another states: “(s)he’d be very happy if she had a toilet. And it definitely impacts her quality of life”: she says that she is happier with the toilet facilities at her workplace than the option she has at her home (TH-HH2). (CV: -1). Another respondent says to the same question: “the fact that she does not have a toilet worsens her life. If she had one her quality of life would be much better” (TH-HH1). (CV: -2). And the fourth interviewee, when asked the same question, replies: “Definitely because that is why they are facing so many difficulties now. A toilet in their place would better their lives.” (TH-HH4). (CV: -1). Hence the lack of a toilet, the situation of having to defecate in the open, under prying eyes, causes a lot of hardship, which could be improved if an enclosed toilet space was given. The counsellor was asked not directly a question about personal well-being but about the prevalence of public toilet facilities exclusively for women or only for men, and how this would affect the quality of their lives. The answer of the counsellor to this is: “No, there is no impact on the quality of their lives. They all have access to private toilets at their homes.” (TH-C). In this manner the counsellor does not seem to acknowledge the existence of the settlement nor the impact on personal well-being the lack of toilet facilities has on the settlers.

Summary of Findings - Thoraipakkam

Table 13: Capability Values – Thoraipakkam Settlers; Source: Author.

	HH1	HH2	HH3	HH4
Physical and Emotional Safety	0	-1	-2	-1
Vulnerability during Menstruation	-2			
Cleanliness and convenience	-1	-1	-1	-1
Privacy	-1	-2	-1	-1
Personal well-being	-1	-1	-1	-2

The above table shows an indication of the capability measurement of the settlers. The fact that the values are all negative means that in regards to human waste disposal the settlers are confronted with an emotionally and mentally challenging situation. Such situation is predestined to cause mental illness and emotional harm over a period of time. As can be seen, at some point all interviewees emphasized the negative feelings about their option of defecation.

Since the settlers, as previously stated, have been living at this area between 7-18 years and one person in her early 30s stated to be “born and raised in this street” (TH-HH1) it indicates that they belong to a group of people which have been overlooked in their existence for the past three decades and whose housing structures have been ‘pushed aside’, and marginalized for the road construction in the year 2000 (TH-HH2).

Of limited Choices and being Left Behind: Settlers by the Fishing Harbour

At this seaside settlement, nearby the fishing harbour in Chennai, some of the people do practice open defecation, yet there is also the possibility of using public toilet facilities located not far from one end of the

coastline settlement. The settlers still living here are the remaining 250 households, out of 650 households, which have not benefitted from the resettlement campaign following the devastation caused by the Tsunami in 2001 (FH-HH4).

Access to Toilet

The utilization of certain spaces for defecation by the residents of this community depends on the location of the settlers' hut, as a public toilet is available something between 0.75 - 2 km away from their homes. One interviewee, who lives closest to the next public toilet facilities states that "(s)he uses the corporation toilet. It is closed at 6pm in the evening. (FH-HH4). It opens at 6 am in the morning and is "(i)n walking distance ... (t)owards the end of the opposite street, 750m at the max (FH-HH4)". She further states that the toilet was built "3-2 months (ago)" (FH-HH4).

Another interviewee states: "(s)ometimes she does it on the rocks, sometimes she uses the corporation toilet" (FH-HH3). This is in regards to huts further away of the existing, relatively new public toilet. And a third interviewee explains: "there used to be a corporation toilet here, but it was demolished for the road expansion" (FH-HH1). Since then they do not have any toilet facility, instead they use the rocky shore. "Right before the men wake up and come, we have to do our job" (FH-HH1), she states. The time for this is at 4am. Further she expounds: "there is a public toilet about 2 km away. So in case they really feel the need to use it in a proper space, they have to walk 2 km, and even then it is a public toilet, which means it is not free, they have to pay 5 Rs. So she says sometimes when I have a stomach pain and I can't do it here, I have to walk all the way there with my stomach pain, go give the 5 Rs and do it there." (FH-HH1). Here it becomes clear that 'the proper space' is only consulted when a person feels in a particularly vulnerable position, with 'stomach pain'. This means that only when they feel vulnerable in the sense that there is a wish for additional comfort for defecation, people would take on the inconvenience to walk 2km and pay 5 Rs.

A different interviewee also refers to the public toilet, which is felt to be quite far away: "There is a corporation toilet opposite (across the road) but quite far away, they have to walk all the way there. From here till the last there, which means that they have to cross the road... maybe 2 km ... In case of emergency they use the rocks. But they can't do it all the time because there are men sometimes, she has to calculate..." (FH-HH2) (CV: "quite far" -1). This highlights that in case of emergency when she feels pressed she still needs to take into consideration the possibility that men might be around, making open defecation more problematic for fear she might be seen or harassed.

When asked how many people would use the toilet the second interviewee states that: "(a)bout 100 people, because they have to pay to use the toilet. So most of them chose to do it on the rocks." (FH-HH2). Such is an example that the user fee may discourage people to use the public toilet, or rather that people do not value the comfort that an enclosed, private, and relatively clean toilet space may give them, over the value of 5 Rs. The interviewee also does not experience the rush of many users wanting to use the toilet at the same time, as she states: "since there are 4 or 5 toilets, there is not much of standing in a queue" (FH-HH2).

Further prompting on the design of the toilet in regards to user-friendliness of people with special needs reveals that "for old people it is very difficult, so they use it on the rocks, because there is a huge platform which they have to first get on, and then it is a sitting toilet, so it is very difficult. She says if it was a standing toilet, they could easily use it. Sitting as in non-western, Indian style toilet. Which means they have to kneel down, bend...(FH-HH2). (CV: difficulty of using corporation toilet for old people: -2). This indicates somewhat the exclusivity of the toilet to able bodied people. In this sense the toilet facility disadvantages the more vulnerable, older people, who, due to their likely reduced ability to move, have a more difficult time in defecating in the open already.

From this it can be seen that the settlers in the area have the limited choice to either defecate in the open: somewhere along the rocky shore, or

go to a corporation toilet, for which they have to cross the high street. The choice of toilet depends on a number of factors, such as ability to walk the distance, toilet opening hours, willingness to pay, and physical abilities.

Cleanliness and Hygiene

The difference between the two options for defecation the settlers have is clear. While the rocky shore is “definitely not clean, it is very unhygienic” (FH-HH1), the corporation toilet “is cleanly maintained” (FH-HH3), “very clean” (FH-HH4), cleaned “regularly and ... convenient” (FH-HH2). (CV - cleanliness corporation toilet: +2, cleanliness rocky seaside: -2) This indicates that the residents find the corporation toilet to be in a clean state, whereas the rocky shore is unhygienic. The fact that all four of the interviewees go back to defecate at the shore at least occasionally, indicates that cleanliness and hygiene may not be enough of a priority for the settlers to walk the distance, especially if the need to urinate or defecate is urgent, which may increase due to medical conditions. Yet they may also defecate in the open during the times the toilet facilities are closed, in which case the wish for hygiene as a pull factor does not apply.

Impact of Access to Toilet on Personal Wellbeing

In order to gain a greater understanding of the value the settlers assign to the access to a toilet structure, the settlers were asked to evaluate the impact access to a toilet would have on personal well-being. All four interviewees agree that it would improve their quality of life:

One interviewee compares the situation before the toilet was demolished to now:

“when there was a toilet, her standard of living was much better because in case she had a stomach problem or something like that, she could immediately go. But now even when she has a stomach problem she has to see whether the men are out, gaze the situation, only then go.” (FH-HH1). (CV: access to toilet +2/ no access: -2)

The point most important to her is the comfort and safety of immediate access a close by toilet facility would give her, so she could avoid the troubling task of pre-assessing the situation before she relieves herself.

Similarly another respondent states:

“Having a toilet definitely affects the quality of life, and it betters it only. She says back then in Pulicat when they had it in their own house, there is no sense of inhibition, thinking about what if the men watch me, cause there is nothing like that. Here she has to make sure that men aren’t there around. That is the first thing that comes to their mind, not the urgency to use it.” (FH-HH2).

(CV: seaside: -2)

This also indicates that the lack of privacy clearly puts the women into a situation of high stress and fear of running the risk of embarrassment or harm.

And further:

“because they don’t have a toilet, it is a struggle to even think about doing the job. Because they have to walk on the rocks, etc. And that if there is a toilet, her life is much much better. She says until the toilet here was there (corporation toilet), it was good as in it wasn’t much of a struggle. Even walking all the way there or there (or have it here) you know it is a big difference. Here it isn’t that much (of a distance). But given that they had to break and demolish it for the widening of the road...” (FH-HH3).

(CV: no access to toilet: -2)

This interviewee aptly uses the word struggle. This indicates the mental struggle the women have to deal with when dealing with the fundamental human need of defecation. This means they are ‘struggling’ on a daily basis, probably several times a day.

How people are struggling to deal with their lack of privacy is vivid in the following account:

“It would definitely improve the standard of my living much. For her, now that she is settled and all, I mean she is a relatively elder woman, even though she is only 38, for me it is not a problem, but for my sons and daughters, especially her daughter given that, she is still only about 19, so she says it is very difficult, because there is a fear that someone will peep and watch from the factories. So people from the road might just peer in and things like that. So she says when the boys and girls come and tell her: people on the road are looking at us, when we do it, she says it is very troubling. So when the girl goes there, people do accompany her. They are apparently peeping from the balconies of the factory. So she says it is very disturbing. So apparently she scolded her daughter saying, don't go after 6pm (she only did so yesterday). So her daughter in law also lives with her. She told both of them not to go out after 6pm. That they should do it during the day.” (FH-HH4).

(CV: no access to toilet: -2)

This interviewee's answer is testament to the intrusion of privacy open defecation brings with it and the emotional harm that such intrusion causes. Restricting a natural urge to the times the public toilet is accessible may not be possible and the curtailing of freedoms has a negative impact on health and well-being: whether it is repressing the urge of defecation that may cause pain and bodily harm, or the fear of being watched that implies psychological hurt. This assessment is purely from the subjective position of the interviewees, and shows unawareness of pathogens released into the environment through the open human waste, which is another major health risk.

Safety, Convenience, Privacy & Vulnerability - Emotional Indifference

The interviewees were prompted on the safety and convenience of their defecation sites, which shows the vulnerability of the individuals, as well as a certain emotional indifference adopted by some of those interviewed.

One interviewee states that when they have the need to defecate during the day, they also have to go onto the rocky shore. She states that “(i)t is very discomforting, but I have to take someone along, for some company and support” (FH-HH1). (CV: FH-HH1: rocky shore: -2). This shows that it is emotionally unpleasant. Yet she does not find it unsafe as she explains that “(s)he has no fear, because since she was young she is used to doing it....(t)here are snakes and things like that but they don’t come when we do it.” (FH-HH1). While one interviewee, a single mum in her late forties expresses her choice for defecation with relative confidence, another interviewee, a seventy-four year old widow states that “on the rocks she has to climb and it hurts her feet” (FH-HH3). For her, “(i)t is much more convenient ... to do it there (corporation toilet) than on the rocks.... Here (corporation toilet) even though she has to get on the platform and sit, it is much more convenient this way. Giving 5 Rs is totally worth it. At night she does it at the rocks. (FH-HH3). (CV: access Corporation toilet: +2, seaside: -1) This indicates this woman prefers the public toilet facilities over the rocky shore for the reason of bodily safety. Yet it also indicates that some people have gotten used to the situation of defecating in the open or may have given up on having an improved situation.

A different interviewee chooses the shore for safety reasons over the public toilet: “(a)t night they use the rocks, given that it is much safer there because there is no lighting there and they have to cross the road ... as you can see there is only sparse street lighting, which is not enough. (FH-HH2). Hence her evaluation of safety reveals a preference of the shore as a place for defecation at night. Yet in the daytime she feels safe using the corporation toilet (FH-HH2).

One woman shares in regards to safety concerns that “(e)arlier there were few snakes. And they started dumping all the sand from other places. So as a result several bugs and snakes did come. And that is the reason why they asked the councillor to build a corporation toilet”. (FH-HH4). (CV: safety: seaside: -1). As this household is much closer to the harbour than the other households, they are also closer to the corporation toilet, which seemingly has been built out of the demands from the residents. However in regards to the convenience of the public toilet she states that “for the elderly people it is not convenient, because there is a raised platform and they firstly have to cross the road. Hence the old people use it in the rocks”. (FH-HH4). (CV: convenience for elderly, corporation toilet: -1) This indicates that there are different perceptions of convenience among the elderly too: interviewee three who seemed to have no troubles walking, prefers the public toilet over the shore, whereas other elderly who seem troubled crossing the road, prefer the shore for safety reasons. This indicates that a feeling of safety may be personal or depending on personal abilities and needs, which influence choice in regards to what is perceived convenient.

An interviewee has stated before that the public toilet is only open from 6 am to 6 pm. She expounds that the toilet possibilities outside these times are troubling: “at night, because there are a lot of factories that have come up, there is a lot of lighting. So even using it at night in the rocks is very difficult for them given that there is light and they might be spotted. (FH-HH4). So to avoid being spotted she “goes to the area where all the boats that have to be repaired are docked, there it is dark. So they do it there”. (FH-HH4). (CV: convenience seaside: -2). And another person’s answer adds: “they don’t go at night, because there are trucks coming and all, but it doesn’t mean that they don’t have a sense of privacy (there), but here (at the shore), there is definitely no sense of privacy, but at night, since it is dark, she doesn’t feel any sort of inhibition.” (FH-HH3). (CV: rocks, sense of privacy: -2). This latter respondent lives further away from the factory; hence she feels ‘more’ privacy than the former respondent.

This provides an evaluation of feeling of privacy in regards to the toilet spaces available to the settlers: privacy is given in the public toilet or under the cover of the dark, but not in daylight when defecating in the open, or when electric light keeps the area illuminated. The many restrictions on privacy imply restrictions on the settlers freedoms to choose, and according to the capability approach, limits on freedoms hinder development.

From above it can be seen that choices for safety are the corporation toilet over the shore at daytime, and the shore over the corporation toilet at night time (some of the interviewees seem not aware that the corporation toilet is closed between 6 pm to 6 am anyway). Restriction on feeling of safety also restricts an individual's capabilities, for that when fear is felt it overrides all other important individual 'functionings'.

When a respondent was asked about her sense of privacy in regards to using the rocky shore as a place for defecation "(s)he says I don't feel like any sense or lack of privacy, you know, or even some sort of hesitation to use it since the time I was 2 years old, I've been doing it. So I'm used to it. She says for all the new people who come here it might be very disturbing, but for me it is an everyday thing." (FH-HH1) (CV: rocks, privacy: 0). She further states "it is her fate that she has to do it there, because there is no other choice." (FH-HH1). This indicates that she has reached some state of emotional indifference, or given up on the idea of access to a toilet facility. To her the destruction of the corporation toilet has led to the behavioural re-adjustment to something she was used to since early childhood.

The limitation of choice for defecation in form of a public toilet which for some is inconveniently far away, and is open only during daytime, to something that endangers human security - open defecation at the rocky shore - indicates the individually varying but as a group existing vulnerability of the settlers.

Control over Personal Space and Needs especially in Regards to a Woman's Menstrual Cycle

The extent to which the settlers nearby the fishing harbour have control over their personal space and needs is very limited. For instance, when women experience their menstrual bleedings

“(t)hey have to do it there, even on the three days. Even on the days when she has to go to work, there are toilets on the streets, there, she can use it. She says that before that, you know it's been four years since they have taken that corporation toilet out, so until then they were using this, the corporation toilet, and in case there was a lot of rush hour, they would do it in the rocks. So that way they are used to it, even then, ... but given that there is no corporation toilet now they even don't have access to it, which means everybody has to do it there, on the rocks” (FH-HH1).

Given the unhygienic state of the shore, the mere action of exchanging sanitary cloths is risky in terms of hygiene, but the human waste that in this manner may enter the living environment is also harmful.

Another interviewee states that in the public toilet “there is some limited control over the personal space, but when it comes to using it there (on the shore), there is none.” (FH-HH2) (CV: control personal space: public toilet: 1, rocks: -1). She indicates that during their monthly cycle, “on those 3 days, they use the public toilet”. (FH-HH2). Similar to interviewee four who also states that during the monthly cycle “(t)hey use the corporation toilet.” (FH-HH4).

When one interviewee is asked about her degree of control over space and needs she however expressed that “(s)he has control over her private space there, in the rocks. Because there is a sand kind of portion. Some sandy place like this, so she just does it in her particular space. It's like each of them have their own... you know they don't cross that particular demarcated area.” (FH-HH3). This may be indicative for some informal

arrangement among the settlers. Yet this interviewee has exceeded childbearing age, meaning that she is freed from the monthly hazard of menstruation, hence she has a different need for privacy.

From above it can be seen that a heightened need for hygiene such as female monthly bleedings can result in the utilization of the public toilet facility over defecation at the shore. The settlers have limited feelings of control over their private space unless a certain emotional numbness that has gained hold in their consciousness is making them feel indifferent about their situation.

Summary of Findings – Fishing Harbour

The tables below show the capability values derived from the statements made by the settlers.

Table 14: Capability Values – Fishing Harbour Settlers; Source: Author.

Access to Toilet

FH-HH2	“quite far: -1
FH-HH2	difficulty of using corporation toilet for old people: -2

Cleanliness and Hygiene

FH-HH2	cleanliness corporation toilet: +2, cleanliness rocky seaside: -2
--------	---

Impact of Access to Toilet on Personal Wellbeing

FH-HH1	access to toilet: +2/ no access: -2
FH-HH2	seaside: -2
FH-HH3	no access to toilet: -2
FH-HH4	no access to toilet: -2

Safety, Convenience, Privacy and Vulnerability – Emotional Indifference

FH-HH1	rocky shore: -2
FH-HH3	access corporation toilet: +2, seaside: -1
FH-HH4	safety: seaside: -1
FH-HH4	convenience for elderly corporation toilet: -1

FH-HH4	convenience seaside: -2
FH-HH3	rocks, sense of privacy: -2
FH-HH1	rocks, privacy: 0

Control over Personal Space/Needs especially in regards to Women's Menstruation

FH-HH2	control personal space: public toilet: 1, rocks, -1
--------	---

These values highlight that while the settlers are considerably more content when using the available corporation toilet, the time and space constraints of it do not make it a reliable option. This means that open defecation remains normally practiced, especially after the road expansion resulted in the demolition of a public toilet facility, which put the settlers in a precarious situation, after already being 'forgotten' in the resettlement scheme after the 2001 Tsunami.

Inequality and Shame - Settlement in Kottivakkam

The settlement in Kottivakkam had public toilet facilities for women but no public toilet for men. This inequality may be attributable to a different perception of shame - while it is less shameful for men to defecate in the open, women, especially when young, are seen as more in need of being 'decent'. Maybe this is why the public toilet for women has been established, yet for the men at the location, especially when more vulnerable due to physical impairments, the lack of toilet negatively affects them in their freedoms of well-being.

Toilet Facilities for Women

Five women are interviewed at this locality. All five use the toilet, which is perceived clean as it is cleaned daily (KV-HH2) (CV - Cleanliness: +1). The multi-cubicle public toilet facility was built "3-4 years ago", and before the facility was provided, the women "would only go at night to use the open space" (KV-HH8). Or, as interviewee seven says: the corporation toilet has been there for five years, before it "was there, there was an open space,

where the women would go to use the toilet only at early morning or late at night, or else no going during the day because it is bright and people can see" (KV-HH7). In this sense the toilet facility provided a great improvement to the women's well-being - not having to suppress any toilet need until the night time, and having a safe and clean place to use. It is used at any time of the day, interviewee one states, as "(t)here is street lighting and things so she doesn't feel scared to use it at night" (KV-HH1). Interviewee three indicates that she and her daughter in law use the corporation toilet, whereas her sons have to go in the open (KV-HH3). She finds the public toilet "very clean" and "the mounted toilet" (a western style toilet) makes it "convenient for her to sit down and do it" (KV-HH3). (CV - Convenience: +1). Interviewee seven adds that the toilet "is very convenient because there is street light and light inside the bathroom." The light "(s)he says at times it works at times it won't". "She says it is not scary". And "(s)he says yeah, there is privacy." She feels she has control over her personal space and needs. (KV-HH7) (CV - Privacy: +1). While interviewee eight confirms it to be convenient generally "(s)he says when I am sick however it is very difficult to get up and walk all the way there. It is 5 min to walk" (KV-HH8) (CV - Convenience: -2). In terms of personal safety "(s)he says when I have to go alone at night it is very scary, however otherwise it is not so much" (KV-HH8). "She says it feels private... But also she says since men sit there, in the evening, like right opposite, it is sometimes pretty difficult or somewhat embarrassing to go to the place". (KV-HH8) (CV - Privacy: 0)

Thus it can be seen that the toilet is perceived as a convenient, clean and private enough place for the women to use, even for someone who might have problems with bending one's knees, as there is a western style toilet. However for those not as mobile it seems more challenging. And one woman feels intimidated by men outside of the toilet.

Toilet Facilities for Men

As mentioned before, the men in this community have to defecate in the open. The husband of one participant, who joined the interview for a short while, states that "the men do it in a very barren wasteland so there is no

question of cleanliness as such” (KV-HH2) (CV - Cleanliness: -1). And while the women have light in the public toilet, the men have no light at night when they need to defecate. As there are no snakes the husband of the participant states “so there is no question of lack of safety”, (KV-HH2) (CV - Safety: 0) just the issue with the light. “He walks about 5-10 minutes to access the nearest open place where he can defecate. There will be nobody there so he has some sort of privacy” (KV-HH2) (CV: Privacy: +1). Another resident and member of the Panchayat representation board, stated that he himself has a toilet at home but “(m)ost of his other friends have a problem because they don’t have access to toilets. The councillor here built a toilet on this very platform. But what ended up happening was that the house owner in the house behind the toilet was saying that the discharge of the toilet are washing into my fields. Because of that the councillor had to demolish the toilet.” (KV-HH5) (CV - Problem: -1). This may be the reason why the men have to defecate in the open.

Another participant comments on the question regarding privacy when defecating in an open space that “he does not feel hesitant to use it or things like that which arise out of lack of sense of privacy, because there somewhat is, given that all the men do it in the same space.” (KV-HH6) (CV: Privacy: +1). In this manner it seems that some comfort is given in the fact that he acts according to the norms of the community. Yet when prompted in regards to convenience of the defecation space he states that it “is not convenient, especially given his age” (KV-HH6) (CV - Convenience: -1).

This inconvenient practice seems largely ‘manageable’ from a personal comfort perspective, as the men have no other choice, so they adapt to it. Thus, while the community toilet arrangement is convenient and helpful for the women in this community who do not have a private toilet facility, it discriminates against the men and invariably sees pathogens released into the environment given the open defecation men have to practice. This poses a serious public health issue for the larger community and area.

Summary of Findings - Kottivakkam

Table 5 shows the Capability Valuations for the Kottivakkam settlers interviewed.

Table 15: Capability Values – Kottivakkam Settlers; Source: Author.

Public Toilet:

KV-HH2	Cleanliness: +1
KV-HH3	Convenience: +1
KV-HH8	Convenience: -2, in situation of illness
KV-HH7	Privacy: +1
KV-HH8	Privacy: 0, embarrassment of using toilet when men are sitting nearby

Open Defecation:

KV-HH2	Cleanliness: -1
KV-HH2	Safety: 0
KV-HH2	Privacy: +1
KV-HH6	Privacy: +1
KV-HH6	Convenience: -1
KV-HH5	Problem: -1

While the sanitation facility for women seems functioning and normally convenient at this location, the practice of open defecation the men are subjected to is untenable, posing a risk to human security in the region. The special vulnerability of people restrained in their physical abilities is put forward, as well as the coping practices when in need of increased hygiene requirements such as when a woman is menstruating. Being required to cut down on income earning activity due to hygiene needs and having to refer to inconvenient and unhygienic open spaces for defecation highlights the restrictions in psychological freedoms of people, such as diminished feelings of dignity and self-worth, apart of the very real loss of income due to income earning time missed.

Workers in the Street and the Public Toilet Dilemma

During the data collection it became evident that there are a certain group of people who suffer from lack of access to toilet facilities: those who work in the outdoors - street or construction workers, vendors and sweepers. Participants who find themselves in such dilemma are a street vendor at a toll station, a construction worker, a person selling fish, and street sweepers. This section gives an account of the statements of participants explaining how they deal with the situation of needing a restroom while at their workplaces. To summarize the findings the participants' capabilities are evaluated in the same manner as before, by attaching number values according to the expression of positive, negative, or emphasized capabilities.

Street Work at a Toll Station

While one interviewee has a toilet at home, she does not have access to toilet facilities when she is at work: "Since she...works in the state highway, selling peanuts, etc., she does not have access to the toilet, and she uses the toilet in the open." (MU-HH1). The fact that she needs to defecate in the open when she works at the toll station indicates not only the spread of hazardous pathogens into the environment, but it also puts the interviewee into an uncomfortable and unsafe situation as can be seen below:

"She ... says when she has to openly defecate when she is working at the highway, she needs to go into the bushes, and also there is a problem because the gents are also using it somewhere around, and she also has to use it, but she cannot feel a sense of inhibition, because if not for that place she cannot have access to any other place. And also she pointed to some wounds on her feet, which she has got because of walking into the bushes. She says that after some time she feels like she doesn't want to go anymore, because it is such a painful experience... to even go and get access. Defecating by the highway means she does not feel any sense of hygiene because it is out in the open. There is no sense of privacy because it is out in the open and cars will be zooming past, on the highway, but she says that

there is no other choice, I have to do it there if I have to. I take refuge in the shelter provided by the bushes. Even the people who are passing by on the road do not have toilets. They also have to do it there out in the open. And there is no sense of safety. There are a lot of snakes” (MU-HH1).

(CV: Convenience: -2, Safety: -1, Privacy: -1)

As can be seen from above she has no choice but to defecate in the open, and cannot feel inhibited by the lack of privacy. Thus defecating in the open here is an act of necessity and not agency. The wounds at her feet caused by walking over rocky or thorny ground prove further testimony of physical harm done to her, and the reluctance of using this choice of defecation again speaks for psychological harm done. The level of hygiene is reportedly very low given that it is unlikely she may have readily enough water and soap to wash her hands and given that she sells snacks at the highway, pathogens may spread to the snack bags or containers. This is a dire picture for public health.

When asked if she would experience harassment by men she states that “(t)he men don’t do anything to her because there is a railway track that runs which is like a midpoint, as in the ladies go on the left side, the gents go on the right” (MU-HH1). This indicates not only the informal regulation over space as a strategy to deal with open defecation, but it also shows that the area is frequently used for defecation making it a hub for pathogens.

Upon inquiring on how she handles the sanitation requirements during menstruation she responded that she cannot afford not to work. “She... manages her period by taking napkins from home” (MU-HH1). This indicates her engaging in employment during her menstruation is acting out of necessity, even though menstruation can be very uncomfortable and disturbing especially when hard physical labour is involved. And with her working at the toll station, it is likely that sanitary waste is openly exposed in the environment.

Working as a Construction Worker

A 45 years old woman appeared satisfied with the sanitation facilities available to her at her home. Yet she works as a non-contract construction worker, and at her workplace she does not have a toilet. "(T)hey do it in the fields or at the lake area...So what she is saying is that even in the lake area, (at her workplace) which is an open space. She says there are no people there, around, so I don't feel very inhibited to use that place. For my defecation." (MU-HH3) And in regards to privacy "she says there is nothing regarding that because the ladies use it on one side, and the guys use it on one side. She says she doesn't even have the fear of people seeing her using it". From her demeanour during the interview - she enjoyed answering questions, spoke loudly and frankly - she appears like a pragmatic woman who has resigned to the limitations of her possibilities and freedoms, hence she is indifferent to others seeing her defecate in the open. (MU-HH3) (CV: convenience - 0; privacy: 0)

Concluding the sanitation part of the interview, the interviewee was asked whether her menstrual cycle would interfere with her work. She states that "at the day of her period she stays home. She says it is only one day." But "no income that day. On that day they don't give her any special leave or something like that, she just misses that day's income. Because they are non-contract labourers. So they don't get days off." (MU-HH3). This shows the added vulnerability of women because of their menstrual cycle.

From her account it appears that the risk of pathogens is found at her respective workplaces, and in the adjacent field where children defecate. The latter could have been relatively easily avoided if educational guidance and effective awareness campaigns had broadened the freedom of the adult population to exercise agency in that they would not allow their children to use the toilet in the open. To avoid spread of pathogens at the construction sites it should be required by the employers to provide toilet facilities.

Waste Picker in the Street

One interviewee is a waste picker, who is gathering the waste of the area with his team. He states that a separate team of corporation workers is responsible for cleaning the toilets. He himself has a toilet at home, yet “(w)hen he is on work, only the ladies use the corporation toilet, the gents do it out in the open or probably by the sea” (KV- I4). This indicates how common and widespread open defecation is, if corporation cleaners themselves also revert to the practice, because they have no other choice, he says: “I can’t think about such things and I just have to do it. I can’t go back home when I have to use the restroom, so I have to do it here. He has no fear because there are no snakes or anything like that” (KV-I4) (CV - convenience: 0, safety: 0). It also indicates the vulnerability of the waste pickers in regards to adequate access for toilet needs.

Selling Fish in the Street

A woman states that at her workplace, the market, there is no toilet. “So if she has to use it she has to come all the way here. Market is 2 h away which means she might not even do it if she feels the urge to.” (KV-HH1) (CV - convenience: -2). This explains why she does not go to work when she has her menstrual bleedings, because she would not have the hygiene facilities she would need in this time but also because carrying the fish she sells at the market for 2h hours - the distance she has to walk to the market - (KV-HH1) may be too strenuous during that time. Another interviewee seems a little more fortunate in this regard, as when she is at work (she walks around and “sells fish at homes”), “when she has to use a toilet she can ask someone at that particular house, to whom she sells fish, to use the restroom, and they allow her to do that” (KV-HH7) (CV - convenience: 0). Yet asked on how she deals with her menstrual bleedings, the interviewee answers that she is not working for three days (KV-HH7). A further interviewee gives a similar answer: “On those 3 days of the month she doesn’t have income. Given that they have to carry some heavy stuff on their head... it is pretty painful, so they don’t go there” (KV-HH8).

Two other interviewees are not employed outside. Yet one interviewee three mentions that “(s)he knows women who even go to work on those days (when they have their period) because they need the income” (KV-HH3).

Testimony of a Street Sweeper

One woman was asked to comment on how she deals with her need for a toilet while out at work and during her menstrual bleedings. She states that “(f)or her... it is a very tough job. Because no one... because she is a street sweeper. She doesn’t know the houses there. And none of them are inviting her, tell her to come... welcome her... help her do her things. She says on those three days I have to bear it with pain and struggle, and come back home. Because it is working in the open, it is streets, so. She says, whenever I can find a public toilet I use it on those days. But otherwise it is a problem.” (MA-HH2) This means that in regards to convenience of access to toilet facilities for her it is certainly very difficult. (MA-HH2) (CV - convenience: -2).

Summary of Findings - Workers in the Street

Table 16: Capability Values – Workers in the Street; Source: Author.

MU-HH3	Convenience: 0; privacy: 0
KV-I4	Convenience: 0; safety: 0 (two persons’ attitude towards their necessity for open defecation is indifferent)
KV-HH7	Convenience: 0. The value is given to reflect the statement that whenever she needs a toilet she would ask the people she sells fish to, hence it is neither readily available but also not too troubling, as her account seems to convey.
MU-HH1	Convenience: -2, Safety: -1, Privacy: -1
KV-HH1	Convenience: -2. This value is given as when the woman sells fish she has no access to toilet facilities, making it very inconvenient.
MA-HH2	Convenience: -2. The value here is given to reflect the struggle she has when having her period and working as a street

	sweeper which means that no toilet facility might be available.
--	---

Table 6 states the capability measures derived from the interview of workers in the street. These findings and valuations indicate that people working outdoors are either indifferent to or find it challenging to respond to the physical urge to defecate and are likely to be required to defecate in the open, even within an urbanized area. Unsurprisingly, pathogens are spread all over.

Further, whether or not menstruation pain might impede a woman to engage in productive activity depends on both, the woman's biological constitution and the activity, but also the degree of hygiene at a safe place at which she can change sanitary towels and the like. Working as a house help where she can use toilet facilities is different to working on the market, selling fish. These are little differences but they have a profound impact on well-being and earning capacities of the women.

Integration and Outreach - Sriperumbudur Settlements

Two settlements are visited in proximity of Sriperumbudur town - one by the state highway just outside Sriperumbudur and one a bit further away, along the road to Mudichur. While houses with toilets in the area are connected to septic tanks, and a "sewerage scheme" is to be implemented over the next three decades (CMW, 2016), the social reality is that open defecation is normally practiced in both settlements. One can feel the need for integration into the urban infrastructure, especially as the settlers are giving their labour to the local industries and are in that manner already part of on-going economic activity in the area, yet development in the social dimension is still lacking. The settlers are literally at the margin or bottom of society and thus engage in the widespread practice of open defecation.

Land Occupied by the State Highway

In this settlement along the high road just outside Sriperumbudur town the majority of people seem to be practicing open defecation, yet there is a

public toilet facility about 1 km away. One person stated to use the public toilet for which she is paying 5 Rs per use and is going there maybe twice a day. She commented that at her “previous place the government had built public toilets for every street. She was paying 2 Rs. That was when she was living in Theni district”. The toilet facilities here are used by “lots of people” and it is “not clean” (SR-HH1) (CV - cleanliness: -1). “She doesn’t like using the toilet or living here”, she is only living here because her husband works in this area. “She does not feel she has control over her needs” (SR-HH1) (CV - control over space and needs: -1). Yet she is using the public toilet, unlike other members of her family, because she has experienced the necessity for ‘closed’ defecation from her previous place of residence. This indicates the effect education can have on behaviour, as in use of public toilet as a socially acquired behaviour that makes her choose walking to the toilet over defecating in the open, even though seemingly the majority of people around opt for the latter. To her, using the public toilet is a valued doing, a capability, preferred over the option of open defecation. Yet she does not enjoy her current place of residence, “(l)ife here is worse than it was before, because here she has no facilities. Before she had lots of facilities” (SR-HH1). This means that moving to the current locality has restricted her freedoms.

Another respondent, a 33 year old housewife and mother of two teenage sons is using the nearby pond area for defecation. She states that “it is safe. Only women go on this side”. Men go to a separate place. She is not commenting on the cleanliness of the place, but in regards to another prompt on safety she says: “It is not safe, some snakes” (SR-HH2) (CV - Safety: -1). It appears that she is coping with the situation of having to defecate by the lake, especially as other households are engaged in similar practices and there is an informal gender divide of where to go. This informal gender divide for defecation indicates practices or habits that people adopt in order ‘to make things work’ within their community. Her ‘choice’ of defecating by the lake is hence a communal practice, which one uncritically adopts.

A 28 year old male, married since last year, has been living here for 20 years and earns a living by being an auto driver as well as running a small

diner (*'hotel'*) at Sriperumbudur bus stand (SR-HH3). He also defecates in the open and it "is not clean" (SR-HH3) (CV - cleanliness: -1), but "free to use". "He doesn't care if safe or not" and to the question of whether he has a sense of privacy using that space he responds with: "No problem" (CV - privacy: 0). This appears as if he copes fine with the situation as he jokes that it is 'free to use'. The reason why he is not using the public toilet which is about 1 km away is: "Due to distance. Some emergency...so go use..." (the open). This indicates his choice to defecate in the open over walking a bit because of convenience and expenses. He may even feel he has more privacy in nature than in a public toilet block where he has to pay for use. Also, since he has been living in the area for over 20 years this means he is likely to have defecated in the open for 20 years, meaning the practice is a habit, which he does not feel the need to discard. When he is working he is using the public toilet (SR-HH3). This may be as in Sriperumbudur town, when he is selling snacks by the bus station, the common place to go to is the public toilet. When prompted on the extent of control he has on his personal space and need he states that: "He wants his personal space, but because it is not his own land, he can't build a toilet" (SR-HH3) (CV - control over space: -1). In this sense it can be seen that his 'choices' are rather practices out of necessity and not a chosen behaviour to achieve a valued doing or being. This is also indicated by the way he speaks about his place of defecation, he jokes about it to deflect from it, as it does not seem a matter he can control.

The next interview saw eventually four members of the family joining in the interview process. It started with the son, 21, who works as an operator in a distillery (SR-HH4). He states that for toilet purposes they go "outside. Lake". And that the cleanliness is "ok". When it comes to convenience, "...He doesn't know how to express it...". In terms of safety he feels "Not bad" (SR-HH4) (CV - cleanliness, safety: 0). When he was asked if he had problems with snakes he stated that "they eat chicken". While the interviewee was keen to participate in the interview he appeared not used to evaluate a common, yet private practice that open defecation encompasses for this settlement. His parents, a plumber and a housewife, were asked if they

would be happier if they had a toilet, to which they responded: “We are not allowed to put bore well, we are not allowed to drill something new, it’s not permanent, so they don’t want to waste their money in building a toilet” (SR-HH4-2) (CV - control over personal space: -1). Yet the family has been living here “(m)ore than 18 years”, in this ‘non-permanent’ arrangement. This translates back to the nature of the settlement, being built on government land. It might have been interesting to explore why they are not allowed to put a bore well, but unfortunately the interview did not cover that, as the focus of the interview when it was conducted was on options for defecation and thus did not probe further.

The family’s daughter is briefly interviewed as well. To the question of how clean or convenient it is to go outside she replies that “she is used to it”, and that it is “no problem” (SR-HH4-3) (CV - Convenience, Cleanliness, safety: 0, Privacy -1). Safety is also no problem but in terms of a sense of privacy she states that “it is difficult for her”. On the days of her menstruation she states that she manages it the “same as usual”. When she is asked whether she thinks that “access to a toilet impacts personal well-being”, “what she is saying is like: what they have, they have to live with that” (SR-HH4-3) (CV - Wellbeing: 0). Hence it can be seen that while more privacy might be desirable, the settlers seem to accept the situation as it is, particularly as they do not own the land. The dynamics of the interview process were such that the interview commenced with the son, the parents seemed curious and joined after some time, and as the aim was to speak to a female member of the family, alone, the daughter was included by the parents, as the mother seemed too shy to participate. This means that the daughter was included not having taken part in the previous discussion and was hence somewhat disadvantaged to the exchange on an unusual matter: sanitation and personal hygiene. Also the interview with her took place with the rest of the family some few meters away, which might have been irritating to her. It would perhaps have been better for the data quality of the research to start the interview with the daughter, but the research process has to be respectful of participant availability and willingness, and attending to the polite request for an interview was initially the son of the family.

When assessing the settlement sanitation options in the light of the capability approach, it can be seen that the freedom of the settlers to choose a valued option for personal relief and hygiene is in fact very limited. They have the ‘choice’ between dirty public toilets about 1 km away or nature behind their houses. From the perspective of the settlers who have lived in the area between 10 to 20 years, using the open is a habit, which to break a dirty public toilet might not deliver a convincing appeal. This break of habit can be achieved through effective education, which was the case in one respondent (SR-HH1). The ‘forces’ impacting the sanitation situation in this settlement are primarily the non-ownership of the land, seemingly restricting toilet construction, and the lack of effective education which would see the public toilet be used over open defecation. Unfortunately, due to these factors, open defecation is prevalent and the settlers are at high risk to be exposed to pathogens stemming from open faeces in the vicinity of their homes.

Summary Findings - Sriperumbudur Roadside Settlers

“what they have, they have to live with that” (SR-HH4-3)

**Table 17: Capability Values – Sriperumbudur Roadside Settlers;
Source: Author.**

SR-HH1	Cleanliness: -1
SR-HH1	Control over space and needs: -1
SR-HH2	Safety: -1
SR-HH3	Cleanliness: -1
SR-HH3	Privacy: 0
SR-HH3	Control over space: -1
SR-HH4	Cleanliness, safety: 0
SR-HH4-2	Control over personal space: -1
SR-HH4-3	Convenience, Cleanliness, Safety: 0; Privacy: -1
SR-HH4-4	Wellbeing: 0

Table 7 provides an overview of the findings at this location. The values collected mirror both, the negative freedom of open defecation but also the indifference of settlers to the situation.

Sriperumbudur - Peri-urban Village

On the state highway from Sriperumbudur to Mudichur there are settlements and villages to be found. At one village here further interviews were conducted on two separate days. The village constituted a typical peri-urban setting with sizable concrete houses, smaller concrete houses and huts. Equally there is a mix between septic tank toilet facilities and open defecation.

Six of the eight interviews conducted at this location were conducted at the beginning of the fieldwork, which meant that they are less comprehensive than those two conducted towards the end of the field-study period. These first six interviews, following the method of convenient sampling, ranged across different strata of economic income. The last two interviews were conducted on a separate day with a former councillor of the locality and his son, who had a family of his own.

The economic standing of a household is reflected in the toilet facilities available to the household members. One interviewee (SN-HH1) is “a housekeeping assistant” and “his wife stays at home”. They defecate in the open. Another interviewee’s sister (SN-HH2) “is a housekeeper in a company” while the husband “is a village officer (VAO)”. Not only does this household have a double income but also do they have a toilet at home. Due to the sister’s husband being a village officer, it is likely that the family has a better economic standing which allowed them to build a toilet. While the third interviewee as well as her husband are housekeepers in a company (SN-HH3), and thus both earning an income, they, as well as their three sons, defecate in the open. A different interviewee also has no toilet facility other than the open - he “is an operator for an assembly line in a factory” (SN-HH4). The fifth household interviewed did, at the time of the interview, practice open defecation, but stated to be constructing toilet facilities in the

near future (SN-HH5). In this household, both the parents of the interviewee and he himself were working, suggesting that enough funds for a toilet construction may be available. The other three interviewees all had their toilet facilities at their homes. Their professions are a professor working in an educational institution (SN-HH6), an electrician/plumber (SN-HH7) who is the son of the former councillor of the area, and the former councillor himself, who is “doing some real estate” (SN-HH8). From this it can be seen that there may be some correlation between income status and on-site toilet facilities. This is as sufficient income allows for the freedom of constructing private toilet facilities, but whether or not such would be realized depends on whether ‘construction of toilet facilities’ is valued.

Out of the eight interviews conducted, four households stated to be defecating in the open (SN-HH1/3/4/5): they have “no toilet facilities at all, use a place by a lake, about 50m away from their hut” (SN-HH1). While, as mentioned above, one interviewee (SN-HH5) out of these four expressed that a private toilet would be constructed in the immediate future, indicating the enacted value of such facility, another interviewee mentioned that “(t)hey would like to build a brick wall toilet” (SN-HH4), which also indicates the desire, but it may not be within their economic reach. The third interviewee expressed that there is no public toilet nearby “because nobody asks for it as everybody is engaged with his or her own work and problems. And since they are used to it (using the open for defecation) they are okay with it” (SN-HH3) (CV - Convenience - 0). One person stated that his family was defecating in the open said “it is inconvenient as they don’t have any privacy... So they have no control over their personal space and needs” (SN-HH1) (CV - privacy, control over personal space and needs: -1). To this person the thought of having a private toilet seemed out of reach as the family is living in a small mud walled hut. The interview was attentively followed by a group of boys who laughed, interjecting “when they have to go they go” (SN-HH1) to defecate in the bushes.

The person of the third household we interviewed was a woman, the mother, and the only female in the household, as she has three sons (SN-

HH3). When prompted about issues of privacy or personal space, the participant answered that “(t)hey don’t really have much privacy. They are feeling bad about their privacy and personal space” (SN-HH3) (CV - privacy, personal space: -1). The interviewee finds that “(s)ocial acceptance is not really a big issue to talk about”, and further that “(t)hey don’t feel their life is much impacted by unavailability of toilet” (SN-HH3). The issue of privacy is reflected in the answer of another person stating that “(h)e goes out in the open for the toilet. He doesn’t find it safe, and they have to look out for snakes. There is no privacy because people come and go, but they have learnt to ignore” (SN-HH4) (CV - privacy, safety: -1). From these answers it seems that because the people do not have a choice of where to relieve themselves, they learnt both, ‘to ignore’ the lack of privacy and to not to be ‘impacted’ by not having a toilet. Yet ignoring implies they have become emotionally resilient to the issue, which is neither ideal nor desirable.

From these four households alone there are at least 17 people that are stated to defecate in the open, at places maybe 50m away from the village. Two other households interviewed both stated they have toilet facilities at their homes, both connected to septic tank facilities (SN-HH2/6). This is a dire picture for public health and human security in the area.

One interviewee offered his view on defecation in the area:

“before there was less number of people in the village, so it was ok for them to go out. Now people have migrated and it is becoming a bit populated, so it is not fair to go outside, since women are not that easy to go outside, and he is saying he has to protect the family and has to give safety to its people, and for this sake, it is a must. He says having a toilet is a must. And in terms of health and hygiene, as a plumber, he was more concerned about toilets” (SN-HH7).

The interviewee seems to refer to both, decreasing privacy in an increasingly populated area and increasing pathogen exposure from more excreta at fewer uninhabited areas. The respondent also told us that despite the lack of a public toilet, there were some community toilets available:

They have a toilet in school for the school children, and they have 2 toilets in church ... and there is no public toilet. Government never tried doing that. It is like they didn't ask the government to build a public toilet (SN-HH7).

As none of the other interviewees had mentioned the toilets in the church or school before it seems that they may not be popular or they might not find it convenient to use them.

Summary Findings - Sriperumbudur Village

Table 18: Capability Values – Sriperumbudur Village Settlers. Source: Author.

SN-HH1	Privacy: -1
SN-HH1	Control over personal space and needs: -1
SN-HH3	Privacy: -1
SN-HH3	Personal space: -1
SN-HH3	Convenience: 0
SN-HH4	Privacy: -1
SN-HH4	Safety: -1

Table 8 shows the values derived at through interviewing the settlers who defecate in the open. It can be seen that of the interviewees who do not have the prospect of having a toilet facility in the near future, the mental well-being derived from dignity supporting 'functionings' such as privacy, control over personal space and needs, safety and convenience, are all confined by the unfortunate necessity of individuals having to defecate in the open.

4.3.4 Concluding remarks

The research finds that all settlers consulted find access to a toilet facility very important.

The case studies each highlight different but similar scenarios:

- The case of 'the marginalized and overlooked' of the roadside settlement in Thoraipakkam, which is a rapidly growing suburban area, is exemplary for how the poorest are being excluded and pushed aside for the interests of those who are not considerate of inclusive growth.
- The settlers at the fishing harbour indicate how the poor are cut short in their choices by urban planning and left out of official schemes, such as the post tsunami resettlement scheme, they are supposedly a part of.
- The inequality in toilet facility provision in Kottivakkam shows the half-heartedness of public service provision
- The lack of public toilets for street workers highlights deficits of urban planning
- The situation of the settlers in Sriperumbudur connects rural with urban efforts and requirements of sanitisation. This means that while a comprehensive sewerage system is not (yet) available, different sanitation technologies such as for instance septic tanks are being utilized and should be promoted and fostered further

On the Importance of Capability Measurement

Measuring capabilities is important because it depicts the freedoms a person has to do and be what s/he considers of value. This research makes the case that it is particularly important to measure capabilities or the lack thereof because physical restrictions, particularly in situations of urgency such as need for use of toilet, result in psychological un-wellbeing, which if repeated or a constant occurrence, can lead to psychological indifference

and can become a mental burden implying a lesser ability to be happy, creative, and free of depression.

Measuring the attitudes and feelings of settlers by asking for their evaluation is also important to contribute towards an understanding of the extent to which they are likely to be willing to accept, use and prefer closed defecation, yet it could also be a way of conceptualizing the subject for the researcher but also for a participant her- or himself to realize the choice s/he has and/or would like to have. In this manner there is much more room for the utilization of a simple capability measurement in further research, to appreciate how those people generally overlooked and left behind value and see their own: Physical and Emotional Safety, Vulnerability, Needs for Cleanliness and Convenience, Privacy, and Personal well-being.

The following chapter will discuss the findings of the research in the light of research on human behaviour, agency and the conscious mind. While the present chapter has given an indication how settlers find themselves in uncomfortable and limiting situations regarding their toilet option, the following chapter is to elaborate more deeply how the living environment impacts on an individual's capability set by laying out an elaboration of the conscious mind and how there is a mind-lifeworld interplay taking place in the creation of consciousness.

5. CONSCIOUS MIND, BEHAVIOUR AND PUBLIC POLICY

The biological tricks that cause consciousness have powerful consequences, but I see consciousness as an intermediary rather than as the culmination of biological development. Ethics and the law, science and technology, the work of the muses and the milk of human kindness, those are my chosen summits for biology” (Damasio 1999: 28)

“Survival depends on finding and incorporating sources of energy and on preventing all sorts of situations which threaten the integrity of living tissues.” (Damasio 1999: 23)

5.1 Introduction

The first part of the previous chapter situated the research within the local policy and geographical context. The second part gave an overview of the research scope and findings. The third part discussed in detail the data collected and attended to the scenarios in which settlers for all or part of their daily lives do not have access to toilet facilities. Their lack of endowments for capabilities has been investigated.

This chapter is exploratory and in parts conjectural. The chapter starts with laying out the research intent of the study to situate the discussion in the knowledge-seeking lens of the research: the episteme of Critical Theory. It investigates a theory of the mind elaborating how consciousness is co-created by the living environment and the individual. The purpose of this is to give a more pronounced explanation of how a person’s capability set is shaped by socio-environmental realities. This addresses research question 2 (What are the dimensions of psychological and agency freedoms of the people in such contexts and their consequences?), as the settlers’ agency

freedom are contingent on the individual's mental endowments and capability set.

This provides a useful angle to investigate the occurrence of open defecation within the context of the Chennai Metropolitan area (CMA). The chapter draws on literature of human behavioural theories and cognitive sciences. It synthesizes the work of Solms and Panksepp (2012), Antonio Damasio (1999) and Daniel Kahneman (2011) into a theoretical model.

The key argument in this chapter is that it should be a goal within human development to support and foster the cognitive capacities or, in Amartya Sen's words: functionings and capabilities, of particularly the poor and marginalised, by reducing the hazards that may harm the 'conscious mind system'. In this sense the thesis seeks to highlight the damage done to human mental and physical development by ignoring the poorest in their plight.

Research Intent

The study in itself was designed to gain some insight into the livelihood realities/ the 'lifeworld' of the poor and marginalized within CMA. Several dimensions were covered in the research interview guide. Firstly, inquiries were made about the settler's migration and occupational background. Secondly, issues in regards to access to water and waste management were explored. As the third topic of discussion the issue of access to toilet facilities was brought up, followed by an inquiry into whether this issue has been touched on either by an NGO or by public services. The purpose of these topics of inquiry was to get a picture of the sanitation reality people live with, by assessing their means, and by probing into their view of governmental engagement regarding that matter and whether they had heard of any kind of NGO that was promoting sanitation capabilities. This point, the inquiry into contact with NGOs or public services was originally aimed at detecting development interventions and to assess their impact, yet it resulted in a test of the extent of inclusion of marginalized groups.

Unfortunately the research found evidence that some of the marginalized live in extremely insanitary conditions.

5.2 Discussing Behaviour and Consciousness

5.2.1 Models of Environmental Stimuli and Behavioural Output

“(A)ll of consciousness may be dependent on the original evolution of affective phenomenal experiences that coded survival values” (Solms and Panksepp, 2012)

This thesis stipulates that in a dynamically changing world, people adapt and respond in a similar dynamic fashion to their surroundings. Even if a person does not engage with the environment, they still cannot escape the second law of thermodynamics, meaning their body will alter/age. This change or development will take place according to a person’s ‘endowments’ for survival (abilities, upbringing, skills, talents, social relations). It is the changing ‘frame of reference’ over time or rather from situation to situation, and how a person as agent or actor responds to it. The way a person responds to or engages with their environment may depend upon the person’s ability to deal with a situation. If this is not given she might look for a ‘way out’, which does not have to be an active doing, in fact it likely is a state of passive being, a state of limbo, of not doing anything until another kind of stimulation - one the person can deal with - comes up. This is an instinctive way of human behaviour explainable by the thought patterns along the lines of the cognitive ease theory or with the concept of bounded rationality⁴⁷. More on this is to follow below. The point of this framework is to indicate that people act within the context of stimulating or restricting circumstances which if life threatening, such as the pathogens released through open defecation, or inhumane living conditions, need to be addressed by authorities. And further, public policy actors can encourage desired public behaviour by

⁴⁷ As discussed in chapter 2.1.1: ‘Extending the self through psychological tools’; as well as in 5.2.2: ‘Bounded rationality’.

adjusting communication and efforts in ways of framing and by anticipating public response⁴⁸. The thesis sets to elucidate the ways in which living conditions impact on people's capabilities for development by shining some light into the driver of all human doings and beings: the conscious mind.

By starting the interview process with general questions about family background, employment and migration history, some foundation of the individual's mind, their 'frame of reference', can be laid out, which helps the analysis of the data collected. The methodological justification finds itself in the understanding that all social learning (Bandura 1971) experiences (which are accessible in the brain through neural connectivity) throughout a person's life impact upon the person's perception of his/her present knowledge, values and consequently behaviour (Loewald 1980). This is the mechanism humans as a species exhibit to secure their survival - learning from experiences -, yet limiting experiences and conditions can also restrict well-being - such can lead to anxiety conditions or post-traumatic stress, or limit social learning in the first instance.

The Lifeworld – Agent – Behaviour Model

"The functions crucial for mental, knowledge-generating activity are spatio-temporal processing of, and application of concepts to, sensory inputs. Cognition requires concepts as well as percepts".
(on Immanuel Kant's view of the mind, in: (Brook 2016))

Below is a model of this mechanism, showing that embeddedness in the living environment does matter to human behavioural choice. This lifeworld - agent - behaviour model is a first conceptualization of how environmental stimuli and the conscious mind co-create a subjective reality of the conscious being.

⁴⁸ Addressed in chapter 5.2.2 Behavioural Economics in Context.

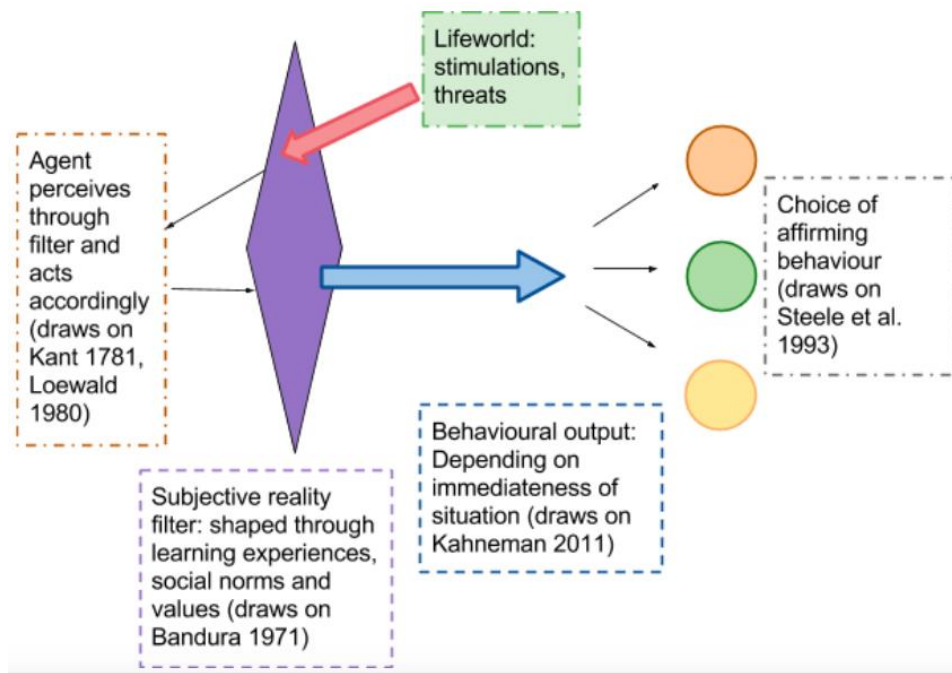


Figure 3: Lifeworld-Agent-Behaviour Model. Source: Author.

To put this model into context one can think of settlers who have migrated from other parts of Tamil Nadu to Chennai for the purpose of work. Within the lifeworld of their original place they have experienced the threat of poverty and the stimulation in form of the pull-factor of the growing capital, Chennai, which is why, possibly taking into consideration accounts, experiences or behaviour from fellow settlers, they made the conscious choice to relocate for income earning activity to support themselves.

Damasio (1999: 25) puts consciousness in interplay with the braincore, saying “(c)onsciousness opens the possibility of constructing in the mind some counterpart to the regulatory specifications hidden in the brain core, a new way for the life urge to press its claims and for the organism to act on them” (Damasio 1999: 25). What is of relevance here is the ‘life urge’ that drives the process of conscientization, the reacting to stimuli and thus a creation of the self within the context of the ‘lifeworld’. In the above model this cognitive reaction to stimuli is termed as the ‘subjective-reality filter’. What is meant with the ‘life-urge is pressing its claim’ can be expressed through the human needs model, in the above model it is fitting under the conceptualizations of behavioural output and choice of behaviour.

Undoubtedly Maslow's hierarchy of needs model has revolutionized understandings about human behaviour and makes a valid claim differentiating between five human needs, namely: physiological needs; safety needs; belongingness and love needs; esteem needs; needs of self-actualization (McLeod 2017). Yet while the model states that "some needs take precedence over others", and that "the need to fulfil such needs will become stronger the longer the duration they are denied", there seems to be room for variability in these statements. For instance the Tiananmen Square protester who stood in front of a tank in 1989 in Beijing clearly put needs of self-actualization before his safety needs. Hence the question is rather which need is the most important to a person at a given time i.e. how s/he values such needs, and why.

An attempt to analyse the psychological influences on behaviour is made by Bertoldo and Castro (2016). The parameters of their analysis in the 2016 paper "The outer influence inside us: Exploring the relation between social and personal norms" are an external source of influence - "descriptive and injunctive social norms", an internal influence - "personal norms and environmental identity", and a mediating dynamic, namely: "identification with the reference group". While this study provides some interesting analytical tools of how the environment impacts the individual, it does not fit the narrative of the present study, which tells a story of neglect and 'invisibility'.

A framework that appears common among practicing psychologists is the conceptualization of six core human needs by Anthony Robbins⁴⁹. These needs are: Certainty; Uncertainty/Variety; Significance; Love and Connection; Growth; Contribution (Nalty 2013). In his teachings Robbins stipulates that one or more of these needs drives behaviour. Taking the example of the man protesting on Tiananmen Square in Beijing in 1989: his behaviour gave him a high degree of significance because he was standing up to a tank, a high degree of certainty - as he was determined to oppose the armed forces and stand up for his beliefs, and also he is likely to have felt to be contributing to

⁴⁹ Cognitive Behavioural Therapy, as for instance promoted by the NHS (2016), is similar to parts of Robbins' work.

a greater purpose. This framework can be attached to the right hand side of the 'Lifeworld-agent-behaviour model', under the 'choice of affirming behaviour'.

Hence it can be seen that the above model depicts a human consciousness as the 'subjective-reality-filter', which is an essential part in the equation of how individuals act and react within their 'lifeworld'. While this above model is indicative for certain behavioural dynamics, it does not provide much detailed guidance for analysis other than an indication that there is a relationship between what the conscious mind is exposed to, the innate instincts and the knowledge which has been accumulated over time, and the behavioural output. A deeper understanding of the cognitive mechanisms and behavioural choice can be gained through advances within the field of cognitive sciences. Such cognitive mechanism is deemed as one part of the consciousness function of the brain. Research by Solms and Panksepp (2012), who explain the concept of 'nested brain hierarchies', of Damasio (2010), who looks into the neurobiological foundations of the brain, and that of Kahneman (2011), which offers an understanding of distinct dynamics of thought patterns, allow just such deeper understanding of the why and how individuals make choices. This is relevant for this thesis as it aims to understand why settlers 'choose' to practice open defecation within the (peri-)urban context of Chennai.

The first conceptualization of cognition discussed is that of the "Nested BrainMind Hierarchies" by Solms and Panksepp (2012), whose research offers some further insights. This is followed by the 'Conscious mind-stimulation- output' model, which is synergizing research by Antonio Damasio (2010) and Daniel Kahneman (2011).

Nested BrainMind Hierarchies

The "Nested BrainMind Hierarchies", is a figure compiled by Solms and Panksepp (2012), and uses Endel Tulving's three form conceptualization of consciousness by linking the different forms to areas in the brain

responsible for these forms or functions, and by showing how these different cognitive functions build up on each other. The three representations of Tulving are the “unthinking forms of experience” i.e. feeling sensations, the “thinking forms of consciousness”, e.g. concerning real life interaction, and the “abstracted forms of perceptions and cognitions” which can be exemplified through creative output. In the model of the “Nested BrainMind Hierarchies” these forms are termed the “Primary-Process Emotions”, “Secondary-Process Learning”, and “Tertiary-Process Cognitions”. It is visible in the figure that “bottom-up learning and development” leads from the primary to the secondary process, while “bottom up influences on ruminations and thoughts” lead from the secondary to the tertiary process cognitions. The tertiary process can assert ‘top down cognitive regulation’ on the secondary process, whereas the second process influences the primary process through ‘top down conditioned responses’. These regulations and responses are indicative for the mechanism through which the conscious mind changes with experiences throughout time, or from situation to situation where choices have been made, for instance the choice where and how to dispose of human waste.

Yet also apparent from the figure is that the secondary includes and extends the primary process, while the tertiary builds up on and includes both primary and secondary process functions. This is important to mention as in reality, the human mind fluidly switches between functions and while the conscious individual may temporarily vacate the sphere of the tertiary process cognitions, the primary process emotions as well as the secondary process learning will always form the baseline to higher cognitive functions. In fact this can be explained using Kahneman’s notion of two systems of thought. The primary process emotions are part of the ‘thinking fast’ system; or rather they are the drivers of it. Tertiary-Process cognitions like creative writing or academic argumentation are the product of the “thinking slow” system. But what about the secondary process learning function? This is the area where behaviour is learned and skills developed. In order for a skill to develop, like driving a car or playing the piano, first “slow thinking” is needed to familiarize ourselves with an unfamiliar process, and when we are familiar

with it, we can “think fast”. Interesting here would be to investigate what may cause the switch in modes of thought. Kahneman (2011) offers some insight which will be discussed below. Regarding the choice of human waste disposal an example can be given through the interviewee of the roadside settlement in Sriperumbudur (SR-HH1) who despite her family and neighbours practicing open defecation chooses the option of using the closest public toilet. This is because through some involvement of ‘tertiary process cognitions’, even if it is merely the exposure to a different social environment at her previous residence, where public toilets are accepted as norm, she has learned the behaviour of ‘closed defecation’. Her learned behaviour, now a secondary-process learning function, is different from behaviour of others, who have ‘learned’ to defecated in the open, because the open defecation behaviour did not involve ‘system 2 thinking’, which is a tertiary process cognition function. The question is how such learning can be scaled up and replicated, which is addressed by academics such as Chambers (2009).

Solms and Panksepp (2012: 156) draw on scholars like David Humes and Antonio Damasio to explain the process of consciousness creation and the role of emotions:

“the internal body generates a very different type of consciousness from the consciousness associated with exteroceptive cortex. The interoceptive brainstem, along with diverse emotional networks, generates internal “states” rather than external “objects” of consciousness... In other words, the internal body is not represented as an object of perception. Rather it gives rise to a background state of “being”; this aspect of the body is the *subject* of perception. We may picture this type of consciousness as the neurodynamic page upon which, or from which, exteroceptive experiences are written in higher brain regions.”

Thus the authors expound that an internally felt state of consciousness, attaches meaning/ emotive feelings, to body external

happenings⁵⁰. To clarify once more, humans can feel their internal body to the extent that there are nerve connections signalling the brain what is going on. This can feel pleasant or unpleasant (and anything in between) to signal physically alarming states of being, like being too cold or too warm. But we can also feel safe or threatened depending on social/environmental interactions, which are then processed and recorded by the conscious mind, to remind us of the consequences when we have a similar experience. Whether it is internal or external, it is both subjectively felt; merely the source of stimulation is different. This is a process of constant circumstantial evaluation, triggering adaptation and learning within and from the environment to safeguard human well-being. Such happens in any situation, but an example in the present context is for instance the emotional reaction of displeasure of an interviewee who is seeking refuge within thorny bushes for human waste disposal while working at a toll station (MU-HH1). This emotion of displeasure is a reaction of the conscious mind to her feet getting hurt by the thorns of the bushes.

Another interesting point offered in the paper by Solms and Panksepp is the plasticity of the brain: its ability to learn and adapt through forming new neural connectivity. For instance, Solms and Panksepp (2012) explain how

“total removal of “visual” cortex in fetal mice (*in utero*) does not impair their adult vision at al... this either means that sensory perception is completely learned, or that perceptual functionality is completely controlled by subcortical structures, with subtle developmental extensions of affective experience perhaps being the foremost vehicle...”

This refers not only to the process through which the brain's functionality can be reorganized (by a part of the brain taking over functions of 'removed' brain cells) but is also indicative for the influence 'affective experience' may have on such functionality. That is why an assessment of value judgement and feelings in a development context that critically relies on

⁵⁰ This links back to the discussion of 'self' in chapter 2.1.1.

human behaviour, such as sanitation, is so important. Emotions can literally open or close the possibilities, encourage or hinder desired behaviour. In this sense the focus should not directly be on financial or economic loss or gain, but rather on whether something feels emotionally worthwhile or not. Maybe the walk to a public toilet does not feel worth the effort, which is why people rather defecate in the open, by the seaside, or somewhere in nature (SR-HH3). Taking into consideration the plasticity of the brain, meaning the ability for people to learn new behaviour if it is in line with emotional disposition, it may be worthwhile for public efforts to think about incentives that would encourage the right behaviour - like being paid a small amount of money for the use of the toilet (Tewari 2015).

Further Solms and Panksepp (2012) state: “(t)he resolution of conscious experiences in the neocortex may be largely learned developmental/epigenetic functions of the brain...”. This means that the process of how humans make sense of their experiences is through the ways they have learned to do so, but

“(e)xteroceptive consciousness and learning reflect and serve interoceptive needs. Learning arises from associations between interoceptive drives and exteroceptive representations, guided by the feelings generated by the affective experiences aroused by those representations. This is why they become conscious; the embodied subject must evaluate them.” (Solms and Panksepp 2012)

For instance we can take the physical (internal) need for defecation, the external experience is that while working at a highway toll station a woman has to seek refuge in thorny bushes which hurt her feet (MU-HH1). The situation not only sounds depressing, but it has a repressing effect on the woman’s cognitive genetic makeup which changes due to influences and experiences and thus may lead to decreased health and well-being.

Another interesting point is made when Solms and Panksepp (2012) describe Freud’s classification of unconscious processes “into those that

occur outside of conscious awareness by dint of automatization (e.g. habituated skills), and those that were actively excluded from awareness by motivated resistance (e.g. electing not to think about something in order to avoid negative affective arousal)". While the cognitive processes regarding automatization of behaviour have already been explored, the unconscious process of avoiding "negative affective arousal" is something new in this thesis and it needs to be looked into. It starts with the experience of negative emotions due to a hurtful event and in order for the conscious mind to protect itself from further harm it reacts with a shielding response whenever something triggers the memory of the event. This is in line with a phenomenon understood as post-traumatic stress on a level that significantly impacts consciousness and behaviour, but on a less intense level such mechanisms are to be found in daily social interactions as well, as learning experiences. On an organic level such means the change in brain chemistry as a response to outside triggers. This response is in line with a threat to our survival to which a conscious organism reacts with 'fight, flight, or freeze'. On a more general scale, such learning explains for instance how women within a patriarchal society are socially conditioned to be at the bottom of a social hierarchy.

Thus, the authors conclude on the cognitive mechanism of learning:

"the goal of all learning is automatized mental processes, increased predictability, and reduced uncertainty or "surprise". It is the biological salience of prediction errors - probably mentally mediated by a variety of feelings in addition to actual surprise - that requires the affective presence of the id (of the biological self). As soon as the ego has mastered a mental task, the relevant associative algorithm is automatized."

The above reflects what will be expounded on below in Kahneman's contribution of the fast and slow thinking systems view. What is interesting is what the authors express further:

“This, then, could be the mechanism of repression: it consists in a premature withdrawal of reflexive awareness, automatization of a mental-behavioral algorithm before it actually fits the bill...” (Solms and Panksepp 2012: 169)

In simple words this means for instance, one could be ‘too quick’ in learning a negative association to an emotionally challenging event, that when in a different situation something remotely similar occurs, the person may react intuitively against it, along the acquired ‘mental-behavioural algorithm’. This is a key principle of post-traumatic stress. Or, approached in a different way, and put into the context of sanitation practices of the peri-urban poor, the ‘withdrawal of reflexive awareness’ could indicate how people have resigned to their ‘fate’ of poverty and lack of toilet facilities (MU-HH3, FH-HH1).

This model of BrainMind Hierarchies proposes a methodology to understand different working ‘modes’ of the conscious mind, an understanding of which clarifies people’s behaviour more broadly by indicating different modes of cognitive processing, but in order to understand more in depth what drives people to make certain choices some understanding of the conscious mind as the matter that operates ‘within’ the BrainMind Hierarchies model seems helpful. This is looked into in the following section.

The Conscious Mind – Stimulation – Output model

“Consciousness is the rite of passage which allows an organism armed with the ability to regulate its metabolism, with innate reflexes, and with the form of learning known as conditioning, to become a minded organism, the kind of organism in which responses are shaped by a mental concern over the organism’s own life” (Damasio 1999: 25).

The later part of this chapter uses the conscious mind - stimulation - output model (discussed here) to analyse some of the data gathered. The

intention of this analysis is to highlight how different circumstances impact on the choices settlers have. While this is similar to the capabilities analysis in the previous chapter, some further definition needs to be made. The agency aspect of the capability approach originates in the perception of an individual consciously making a choice from some given capability set, whereas well-being aspects are considerably influenced by the 'non-conscious'.⁵¹ This is why the lifeworld–agent–behaviour model, precursor of the conscious mind–stimulation–output model, (both drawing on Kahneman (2011)), includes a subconscious dimension. It includes the 'lifeworld' and its stimuli and threats the individual person or family engages with or is exposed to. These stimuli can stem from the physical infrastructure, socio-political institutions, and the actions of individual norms, habits, etc.

A perhaps better way to depict the 'frame of reference' of an individual is by understanding the concept of the conscious mind, which has been mentioned before. For the purpose of clarity it is necessary to make some conceptual distinctions first before proceeding with the model. The mentioned 'frame of reference' is synonymous with the 'conscious mind'. It can be a cognitive 'resource' to its organism (e.g. human), built on cumulative and longer-term experience or training which will be available for system 2 modes of thinking an individual engages in, as well as trained instincts, hence system 1 resources. It is for instance the cognitive endowments of a political candidate launching her party manifesto for upcoming elections. The 'subjective reality filter' is just what the name says, the subjectively filtered reality at a given point in time by an individual. For instance, it could be the candidate answering a challenging question with a previously prepared response. What is different here to the general endowments mentioned before are the precise dynamics of the situation influencing the conscious mind. An example is a challenging question from the audience, which is responded by the candidate confidently, as the prepared answer allows for such; yet the dynamics could be different if the candidate was not prepared or if the question was not challenging. This is predominantly 'system 1'

⁵¹ The well-being aspect and agency aspects of a person's capability set has been discussed in chapter 2.1.3

thinking but can also involve drawing onto system 2 cognitive resources. (These 2 systems are not clearly defined as separate entities; rather there is a smooth transition from one to the other. This has been indicated above in the 'Nested BrainMind Hierarchies' model). The 'subjective reality filter' is just a snapshot in time of a given constellation of cognitive resources used or of the conscious mind engaged.

To deepen the understanding of the notion of the conscious mind, Damasio (1999: 10) offers some insight, as he depicts the conscious mind as 'the presence of you', which is "the feeling of what happens when your being is modified by the acts of apprehending something". It is precisely these acts of 'apprehending something' that are caused by stimuli to the self; to the conscious mind. Damasio (2011) further states: "a conscious mind is a mind with a self in it. The self introduces the subjective perspective in the mind, and we are only fully conscious when self comes to mind". And that "in order to make minds, we need to construct neural maps". These neural maps are important because they indicate neural activity for different regions of the brain in regards to senso-motor impacts, as well as in regards to memory functions, for instance the memory of behaviour practiced from childhood, open-defecation. Damasio (2011: 26) gives a summary about the neural activity within humans:

"Neurons share most of the characteristics of other cells in our body, and yet their operation is distinctive. They are sensitive to changes around them; they are excitable (an interesting property they share with muscle cells). Thanks to a fibrous prolongation known as the axon, and to the end region of the axon known as the synapse, neurons can send signals to other cells – other neurons, muscle cells – often quite far away. Neurons are largely concentrated in a central nervous system (the brain, for short), but they send signals to the organism's body as well as to the outside world, and they receive signals from both."

This clarification serves to explain how the mind, through excitable neurons reacts to changes around the 'mind', either within a person's

physique for instance through experiencing pain, or changes which manifest as stimuli within a person's 'lifeworld', relating back to Figure 6: the lifeworld-behaviour-output model.

Since the open-defecation behaviour has been practiced, and that way 'modifying the being', and with each repetition it is reinforced, strengthening the neural pathway, it is a behaviour readily accessible within the conscious mind, and engaging in it almost 'feels like the right thing to do'. In this sense consciousness is the cumulative map of neural pathways in one's brain. Pathways that can be strengthened or not being pursued at all like the piano lessons one may regrettably have not converted into the ability to play skilfully. While the failed piano virtuoso may still be able to produce a simple melodic sound with the instrument, more difficult music pieces are unlikely to be accessible to one who has not played them before. By picturing the map of neural activity in the human brain with the brain stem as the core one can follow Damasio's stipulation that: "(c)onsciousness is not merely about images in the mind. It is, in the very least, about an organization of mind contents centred on the organism that produces and motivates those contents" (Damasio 2010: 19). He further states that

"(c)onsciousness begins when brains acquire the power ... of telling a story that there is life ticking away in an organism, and that the states of the living organism, ...are continuously being altered by encounters with objects or events in its environment, or for that matter, by thoughts and by internal adjustments of the life process" (Damasio 1999: 30).

This shows that the mechanism organising the conscious mind is in a constant flux or learning process depending on internal or external stimuli. In regards to the conscious mind's role in human survival instincts Damasio (1999: 24) stipulates:

"If actions are at the root of survival and if their power is tied to the availability of guiding images, it follows that a device capable of maximizing the effective manipulation of images in the service of

the interests of a particular organism would have given enormous advantages to the organism that possessed the device and would probably have prevailed in evolution”.

In this manner Damasio depicts the role of the conscious mind within the evolutionary development of humans. The ‘device of guiding images’ is crucial for survival and can explain why settlers make their ‘choice’ of open defecation, because their ‘guiding images’ had been crafted in a manner that sees OD as only or more convenient choice if public toilets are inconvenient.

The products of the conscious mind, or the pictures created by consciousness, are thought patterns, which can either be quickly accessible or requiring more effort to be ‘thought through’. This degree of accessibility is down to repetition and practice, as can be explained using Kahneman’s (2011) illustration of two system thinking: fast (thinking 1) and slow (thinking 2). Fast thinking is the intuitive and automated way of thinking, whereas slow thinking is the reasoned, calculative thinking that takes a longer time. Corresponding to ‘system 1’ thinking is fast and reactive behaviour like for instance catching a ball flying straight at us to avoid it from hitting our head (that is if we are used to playing with balls, otherwise we might just be startled by the object flying at us). Slow and calculative behaviour, like beginning to learn how to play a piano, requires more focus and engagement of the cognitive system 2. With enough practice a skilled piano player may be able to lose himself in almost intuitively playing the piano, producing a seemingly effortless piece of music, which to him is close to being effortless, because ‘endless’ practice has made the neural connections responsible for mind to finger to ear to mind coordination very prominent. Of course this is not only the case for a highly regarded skill like playing the piano but also for behaviour that may be considered low skill - like walking in a straight line. This seems easy to those who are used to walking, but maybe not so much to a toddler who has just learnt to walk. In this sense it is relatively effortless to revert to a long practiced behaviour like it is for instance the case when the interviewee at the fishing harbour explained that to her it is not much of a problem to defecate by the seaside after demolition of the public toilet,

because she has been doing this since she was a child (FH-HH1). Looking at the picture of a neural map - activities, behaviour and thoughts one is used to engage in - is helpful in understanding how a new behaviour can be learned. Determinants of behavioural adaptation may be perceived usefulness and what 'feels right', which is likely the case with a long practiced behaviour. In this sense, the new behaviour needs to 'feel right'.

To reiterate what this section has explored it can be said that humans have cognitive resources based on their learning experiences. These resources are accessed via neural pathways, forming a neural map. The way in which these resources are accessed depends on the urgency of the situation as well as the accessibility of the resources. This is depicted in Figure 4, indicating how environmental stimuli are causing behavioural output via the conscious mind, and how some of these behavioural output choices have been analysed by what has come to be known as behavioural economics. Accounting for previously learned experience, accessibility of cognitive resources and urgency of situation, the person sees the world through a subjective reality filter. This is an approximation of human consciousness or the conscious mind at a given moment in time. Yet other influences can also play a role in the conscious mind system. Such can be an unusual chemical balance within the cognitive system due to substance abuse or some neurological disorder, restricting neural activity. Assuming chemical normality, the scholarly literature on behavioural economics indicates ways in which the subjective reality filter can be influenced, or 'framed'. Some concepts are explained below. This is important to consider in the public policy design process as desired behavioural responses to policies are the purpose of policy design and implementation.

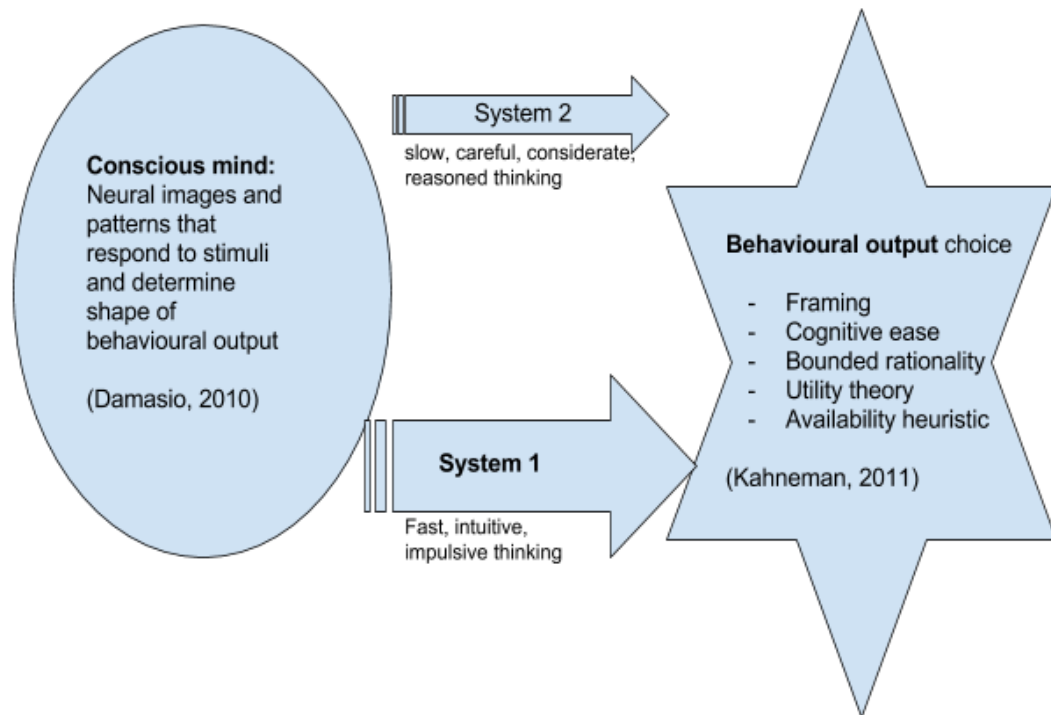


Figure 4: Conscious Mind – Stimulation – Output Model. Source: Author.

5.2.2 Behavioural Economics in Context

Communication is the act of sending a message from one person to the other, yet the ‘packaging’ of the message is playing a role in how the message is received. This has been understood and implemented by the advertising and marketing departments of successful consumer product industries, and arguably could benefit government policies too. In this sense the behavioural economics ‘toolkit’ shows useful techniques to guide policy design, especially when done in a way that is intelligent and altruistic⁵².

⁵² See chapter 5.5 Intelligent Altruism.

Framing

The notion of framing describes the descriptive content of a piece of communication, which can trigger an emotionally filtered response from the recipient of the communication.

Kahneman (2011: 88) gives an example: “The statement that “the odds of survival one month after surgery are 90%” is more reassuring than the equivalent statement that “mortality within one month of surgery is 10%” From this it is evident that the first statement triggered more emotionally calm response than the second one.

In an attempt to get children to use the public toilets instead of defecating in front of them, as the cubicles may appear scary and alien, incentivising the toilet visits through small payments or chocolates for the children as is happening in Ahmedabad (Tewari 2015) is an example of how the issue of public toilet use can be successfully ‘re-framed’, from ‘scary’ to ‘reward’. This means it is about how a message, an action, or a policy initiative is received.

Receiving the Message

With the perception of the framing of a communication in mind one can understand how the settlers in Thoraipakkam felt extremely marginalized as they were watching surrounding infrastructure development over the years but themselves were left in inhumane and challenging circumstances. The message they received from the surrounding buildings, as well as being pushed aside for the road construction, is that they are poor, marginalised, voiceless and literally in the way. The response to that seems a deprived sense of self-worth and hopelessness. With that weighing on one’s mind, who would be open to learning a new and strange behaviour unless it provided some sort of lessening of the emotional burden and improvement in self-esteem? This shows that the framing of any sort of message is a determining factor whether or not individuals are receptive to engage with it.

Framing a Delicate Subject

Speaking about the subject of defecation is challenging, both socially and intellectually, simply because human faeces are highly dangerous to human health, which is why instinctively we are repelled by the subject. Likely because it is a subject instinctively ‘blanked out’ of the conscious mind, as the thought and smell of excrements is repulsive, alas not inviting to engage in; it has politically not been given the urgency it deserves.

In this line Kahneman (2011: 301, emphasis in original) elaborates: “As we saw earlier with the word *vomit*, the symbolic representation associatively evokes in attenuated form many of the reactions to the real thing, including physiological indices of emotion and even fractional tendencies to avoid or approach, recoil or lean forward”. Therefore it can be understood that a normalisation of the topic of appropriate sanitation is necessary, to lessen the emotions of disgust invoked through marginal or symbolic association. The way to bring the matter to the front, to the aware and critical mind, is to highlight it, speak about it, and prioritize it.

Failure of Previous Efforts

If eradication of open defecation was a political priority, one should assume that a society should be capable of doing so. It seems the problem has been approached through a focus on hardware, without actually understanding the basics of the problem - as pointed out before in literature examined by Chambers (2009); it is a behavioural issue requiring analysis and continuity of ‘software’ dimensions⁵³. In this manner the framing of the past political message may not have been helpful. Instead of building of toilets the policy targets should have been continuity of open defecation free status. Yet that requires time and effort and is cognitively not as easily accessible.

⁵³ See chapter 2.2.2 (Community Led Total Sanitation – approach in practice).

Cognitive Ease

The difference between a mental mode of cognitive ease and cognitive strain is, according to Kahneman (2011: 59) the situation of intellectual challenge one finds oneself in. Kahneman (2011: 60) shows on the following graph how the causes of cognitive ease: repeated experience, clear display, primed idea, good mood; can lead to the consequences, which are that it: feels familiar, feels true, feels good, feels effortless.

In order for a person to critically utilize their cognitive capacity one needs to feel not at ease in their respective life situation. “A happy mode loosens the control of System 2 over performance: when in a good mood, people become more intuitive and more creative but also less vigilant and more prone to logical errors” (Kahneman 2011: 69). This means that if our survival is threatened the human species gets inventive. If one feels too much at ease one would not feel compelled to utilize the effortful system 2 to think. However, “when we are uncomfortable and unhappy, we lose touch with our intuition” (Kahneman 2011: 69). And this may happen frequently, as “(t)he brains of humans and other animals contain a mechanism that is designed to give priority to bad news” (Kahneman 2011: 301). This would explain that when feeling low or depressed one is not intuitively quick to respond to stimulus to our creative or thoughtful critical mind. Yet, system 2 thinking and the required “(c)ognitive strain(,) is affected by both the current level of effort and the presence of unmet demands” (Kahneman 2011: 59). This is why being in a state of unhappiness, low mood or depression, can often result in cognitive stagnation, since system 1 is not engaging but system 2 may be tired or overwhelmed by the situation.

What is interesting in this and overlapping with the previously discussed notion of ‘ease of access’⁵⁴ is that repeated experience of a behaviour such as open defecation can be seen as an easily accessible and trained behaviour that ‘feels right’ by those engaging in it. This highlights the

⁵⁴ See 5.2.2 (Behavioural Economics in Context).

need for a thorough ‘re-training’, as falling back into old behaviour is just too ‘easy’.

For policy makers, not only is it helpful to design policies in a ‘cognitively easy’ way for the recipients, but to also have this as a guiding principle within public office. This principle should be in line with intelligent altruism (the capability approach)⁵⁵.

Bounded Rationality

The idea of bounded rationality stipulates that the way an agent makes a choice is depending on the cognitive endowments available to him as well as the time he or she has for pursuing the choice. What can be learned from Kahneman (2003) is that “(t)he central characteristic of agents is not that they reason poorly but that they often act intuitively”. The intuition often depends on the time available for decision making, when time is pressing people are cognitively more restricted in their choices and are likely to react in a way that is the most familiar to them. A scenario explaining this is for instance that of settlers practicing open defecation by the beach side when the public toilets are unavailable, because they have been doing so since childhood, and the natural urge is pressing for a solution. Kahneman (2003) further states that “(w)hat is natural and intuitive in a given situation is not the same for everyone: different cultural experiences favor different intuitions about the meaning of situations, and new behaviors become intuitive as skills are acquired.” In this line Kahneman opened the analysis up to be context specific, inviting it to be more to given socio-cultural settings as well situations, because what may be the most readily accessible solution to a given situation is also depending on contextual circumstances like for instance whether a public toilet has been demolished or whether it is only accessible for women. Choice depends on socio-infrastructural parameters within the ‘lifeworld’ of an individual. In the city environment, facilitating a healthy choice is crucial for the wellbeing of all city dwellers.

⁵⁵ Discussed in 5.5 (Intelligent Altruism).

Availability Heuristic

According to Kahneman (2011) the availability heuristic is a cognitive predisposition to the present situation depending on something that has occurred in the memorable past and is of significance regarding a person's safety. A simple example would be that because of a recent violent public incident people affected are more alerted in general about such violent incidents and may seek to avoid public places. The knowledge and memory of the violence is easily available because of its emotional significance. To put that into the context of poor settlers in regards to their perception of the local government is for instance that the settlers have been replaced for clearance of a certain area without compensation but not been recognized in their livelihood needs. This is why they are disillusioned with the local officials.

Conclusion on Behavioural Economics in Context

As such it can be seen that combining the understanding of a subjective reality filter of consciousness with behavioural economic concepts can provide a tool for analysis into some foundations of consciousness, as taking into account the effects of 'framing', 'cognitive ease', 'bounded rationality' and 'availability' can prove helpful as these set parameters for behavioural choice.

The way in which officials or outsiders engage with a settlement community for development purposes matters because the 'framing' of the development initiative with the settlers as recipients of charity ultimately leads to the perception ('availability') that outsiders engage in charitable ways, with the reaction of settlers being that they are "sitting and waiting for the mzungu (white people) of the donor organisations, or someone from the City Council, to come and do it for them" (WSSCC 2004: 10). This argumentation is to underline the importance of approaching the settlers with respect and a belief to enable and support their agency for change and not communicating to them to be recipients.

5.2.3 Summary of Behaviour and Consciousness Discussion

The purpose of this section is to bring together some analytical tools that could serve as future points of reference. These are based in

- a) the research of the conscious mind (Damasio) and the insight that behaviour is guided by a map of neural pathways of previously learned experiences, and the role of emotions in such, for instance that humans seek rewarding, safe or 'affirming' states of being;
- b) the findings that thinking (and doing) happens in conceptually defined 2 systems: fast and slow (Kahneman);
- c) the insight that the thought and behaviour systems can be organised in a nested BrainMind hierarchical system (Solms and Panksepp)

It is especially the role of emotions, the concepts of learned neural pathways and 2 systems thinking that are referred to in this piece of research. This addresses research objective 4: the examination of the relationship between behaviour, consciousness, and mental endowments.

In the following, the chapter takes some examples from the field to discuss how people have adapted their lives to stimuli. The conceptualizations of agency by Sen and Giddens⁵⁶ are both useful in the sense that Giddens' broader social dynamics on agency are reflected in the subjective realities of people, whereas Sen's agency as analytical entity focuses on specific circumstances, which is why the chapter will further illustrate the situations in which stimuli for safe defecation is given or not. The methodology of the fieldwork allowed for some insights into the livelihoods of poor households, not only with regards to their toilet facilities but also regarding social dynamics created by agents or individuals moved by resettlement schemes.

⁵⁶ As discussed in chapter 2.1.3 (Agency – Concepts by Giddens and Sen).

5.3 Discussing Realized Capabilities and Wellbeing

After discussing some of the foundations of consciousness the remainder of the chapter will consider how impacting environments can be enabling or restrictive to a person's conscious mind, behaviour and well-being. In particular this will cover some feelings of empowerment and positive affirmation of participants who had the freedom to engage constructively. It will do so by reflecting on evidence gathered from the field visit. For this, section 5.3.1 makes parallels between data from Perungudi Medu and data gathered from Mudichur. The reason for this comparison is the availability of comparable data - an interview at each location with someone who is able to speak from a certain level of knowledge or authority about the community.

The section 5.3.2 covers research findings in relation to regional migration. Distinctions can be made between voluntary migration, resettlement within a government scheme, and forced displacement.

As a third section (5.3.3) the thesis links the subjective realities section (5.3.2) with the behaviour and consciousness discussion (5.2).

The final section (5.3.4) discusses the possibilities of development interventions or assistance for safe sanitation.

5.3.1 Case Study Comparison - Mudichur and Perungudi Medu

Both locations, Mudichur and Perungudi Medu, are in the periurban area of Chennai and at the time of field visit have not been integrated into the city's canalisation system. At both locations human waste was disposed of through toilets connected to septic tanks. While the faecal sludge at Perungudi Medu was collected by Chennai corporation tankers and presumably disposed of in the nearby sewage treatment plant, the faecal sludge in Mudichur, which unlike Perungudi Medu, does not lie within the

2011 extended city boundaries, is extracted through tankers from the household's septic tanks but then is dumped somewhere in an uninhabited area (MU-VA), which shows a gap in the chain of safe sanitation management.

The next section will consider both case studies in line with the following questions:

- What is the interviewee's frame of reference and how have resources to his conscious mind been influenced?
- Is there a correlation between the interviewee's experiences and his behaviour?
- How is the ability of the interviewee to achieve developmental progress in his community influenced by his resources?
- To what extent is the role of the larger environment, for instance government, important for the sanitation realities on the local level?

Mudichur - Panchayat President

At the time of the field visit (March 2016), the Panchayat President of Mudichur was available for citizens to speak to and he agreed to an interview. He himself is running as an independent candidate, not affiliated with any of the parties, which indicates that he could have had to some extent the freedom to govern over the Panchayat without having to follow party policy lines. It is also indicative of a certain need this candidate may have had to prove himself beyond party affiliation. For instance, the Panchayat had won the 2008 president's award for achieving total sanitation (Madhavan 2008), which shows that the human needs of significance, connection and growth of the Robbins' human needs framework⁵⁷ are all met by winning the award. Part of the campaign was a *rangoli* drawing competition promoting environmental awareness as well as hygiene and safe sanitation. This showed some sanitation 'software' promotion in line with research suggesting that such 'software' is crucial for sustained open

⁵⁷ As previously discussed in the section 'The liveworld - agent - behaviour model'.

defecation free status (Chambers 2009). The president portrayed himself in the interview in a way that stressed the achievements of Mudichur village in regards to sanitation: a solid waste management system and open defecation free status as all houses officially had a toilet. From the brief interview with a focus on the village's sanitation system it cannot be determined how the conscious mind of the president drives all his actions. Yet it can be said that with him being an independent candidate he faces less restrictions in terms of party policy lines. Also, by winning the open defecation free status the village leadership is predispositioned for hygiene and sanitation awareness and promotion. Further, the educational certificate of a "Study tour to Sweden in Solid Waste Management" in 2009 (after winning the total sanitation award), which the president visibly displays, indicate that he continued with a frame of reference keen to promote waste management and sanitation within Mudichur. In his office also was a 3-dimensional model of the waste management plant. The study tour is likely to have reinforced already establish cognitive connections (neural pathways) in regards to the subject of waste management and sanitation and reaffirmed the president's doings or beings.

Yet the president admits to shortcomings in the form of lack of faecal sludge treatment plants for the area, limited resources on the side of the government, and lack of underground canalisation system due to the village being still quite rural and poor. He indicates that in order to deal with the shortcomings of government resources the administration has encouraged the formation of self-help groups: a resident welfare association, or a youth group, etc., which have the purpose of civic organisation to maintain the infrastructure the administration has provided, such as roads. The waste collectors for instance are paid through household contributions collected by the welfare association (MU-VA).

This implies that in regards to the issue of sanitation the village administration seems to be managing reasonably well. Questions arise in regards to both, the remaining sanitation shortcomings within the panchayat - for instance the fact that children were allowed to defecate in the open - as

well as to what extent the village's success in sanitation achievements may be replicable. It appears that the president's agency to promote and achieve the total sanitation award was crucial, since without the village leader taking on the task of promoting sanitation at household level, this could not have been realised. And prerequisite to the agency is a conscious mind receiving the right kind of stimulation from the social environment, coupled with the ability to respond to it in a way that is subjectively rewarding, for instance through increased feeling of significance.

Perungudi Medu - case of social worker

As previously mentioned, the sanitation problem in the area visited in Perungudi Medu was not the lack of toilet facilities but the lack of solid waste collection. By chance, one of the respondents was a social worker that lived in the area for around 20 years. It is interesting to consider how he became a social worker, which he shared during the interview. In particular his engagement was triggered by a series of events. It is as a young man that he witnessed how a Christian priest installed a statue of a Christian father preaching to some Hindu population. Being troubled by this he voiced his discontent, leading to the statue being removed. These events formed the 'initiation' for him to engage in pursuing and organising social protests against perceived injustice (PM-HH5). The interviewee readily shared this story, which means he is still very aware and conscious of it. The positive response to him voicing a perceived injustice resulted with a learning experience, which framed his following actions and professional path. The agency dynamic here is given by him consciously choosing to firstly speak out against the 'injustice', the statue, and secondly, after positive reinforcement, removal of the statue, to pursue a career as a social worker in the human rights and anti-corruption bureau. About this he states in the interview that:

"For his job he is covering an area of 60-100 km. What he does specifically is for instance if some people want some benefits from the government, he goes and fights for them. Or if two people are

disputing and he finds that one party is not able to get their benefits from the other party, he goes and helps them". (PM-HH5)

This is to highlight the interviewee's frame of reference, which can be described as being in the position of a mediator or advocate on behalf of those less articulate or less knowledgeable. His behaviour is of course influenced by his cognitive resource of 'success in demanding a rectification of injustice', allowing him to act in this manner.

In regards to the people's access to physical resources within the locality the interviewee states that:

"Initially in India it is Gram Panchayat who will decide and people will accept their decisions. So initially it was decided that people who come to Chennai, who are in need of employment and who are not able to afford so much rent, the government has allotted this area for these people.

They levelled up the land because it was uneven and they constructed buildings but in spite of that they didn't have road facilities, water facilities and electricity. These 3 basic facilities were not given. This was 25 years back. Since 10 years they have electricity in this area. Road facilities and so on all have come by great protest. And he has done many protests for the people." (PM-HH5)

From this statement it appears that firstly, the government has not been providing basic facilities even though the land was officially allocated for settlers, highlighting a shortcoming on the official side, and secondly that only through bottom up protest organised by settlers has anything been achieved with regards to a basic development of the area. The interviewee stated that he had constructed and readjusted the septic tank of his house by himself, that the other houses in this area all have a septic tank, and that he is not aware of any open defecation practiced nearby.

Discussion of the cases

Comparing the findings of the interviews in Mudichur versus Perungudi Medu one also has to distinguish between the positions of influence the interviewees find themselves in. Of course the panchayat president is a member of government, while the social worker is habitually arguing with the government. This is not to say that as government official one has no restrictions in one's doings, but to prioritize sanitation and removal of human health hazards has to be of any official's interest. On the other hand officials may be inundated with requests, a reality which makes effective argument of a social worker relevant, so that critical jobs may be prioritised.

In both cases it became apparent how viable challenges to the individual, achieving total sanitation or religious respect, extended their cognitive endowments, leading to a continuation of similar behaviour. The interviewees' acquired agency has proven crucial for further developments within the locations: for instance road constructions in the area (Mudichur) with resident's contributions (MU-HH5), or electricity and road provision in the area of Perungudi Medu, which is said to only be achieved through protests by the residents.

From both examples it can be seen that the larger environment does play a role on the local level. In the Mudichur case study it was the national total sanitation campaign, which resonated with the panchayat president and his potential abilities. The campaign itself may have been unsuccessful in most parts of India (Hueso and Bell 2013) but it offered a pathway for a committed agent, in form of the panchayat president, to establish and affirm himself. The Perungudi Medu case highlights the importance for governing bodies to pay attention to the realities of the poorest residents and to be comprehensive in their development plans.

5.3.2 Subjective Realities of Resettled Settlers

In the light of exploring subjective realities of marginalised settlers, the theme of migration is an important angle because the change in one's familiar environment implies a challenge to the human conscious mind system.

Migration may be assumed to happen primarily for socio-economic reasons, and towards the city, but that is not the only reason for populations to resettle. Within the context of the urban space, as became apparent from the interviews of the settlers at various locations of greater Chennai; there is outward (backward) migration, resettlement, failed resettlement, and unacknowledged displacement by public authorities. The publicly driven resettlement dynamics are particularly interesting as they highlight an invasive and disruptive role the public can play in the livelihood realities of the poor and marginalised in the urban or peri-urban context.

Backward Migration Mudichur

The village of Mudichur allowed for some observation in regards to movement patterns of the poor. The interviews conducted here indicate that there is a tendency for an outward migration, which can be linked to affordability of inhabitable land or rent for housing. The interviewees were conveniently selected within the village, which predominantly consisted of concrete houses and few shacks. All five interviewees share a story of resettling to Mudichur, four (MU-HH1/3/4/5) had moved 'outwards' from Tambaram or Saidapet, located closer to the Chennai city area, to Mudichur. Three of the interviewees lived in Mudichur over 10 years, one for four years.

Subjective Realities

In Mudichur, where private sanitation facilities were given, it is interesting to notice, upon reflection, that all interviewees appeared content with their living situation. It could be that this had to do with the substantial

flooding that had occurred a few months before, or rather with the help and rescue efforts that led to a significant amount of attention being given to people who may normally not enjoy as much attention. Two scenarios are possible: people are glad that the floods are over and thus generally content, or people are happy to talk to whoever is interested in them as they may have had recent positive experiences through relief workers. A third possibility, and which is more likely, since the interview focused on sanitation, is that people here are indeed generally content regarding their sanitation situation. Yet another dimension which needs to be taken into consideration to assess the positive state of mind is the level of perceived equality within one's community (Pickett and Richard 2010), which is the case in Mudichur as it is still perceived as rural (MU-VA).

A family that was interviewed consisted of a mother with two children and her parents. The house had toilet facilities, but when the mother was working at a toll station she had to use the open to defecate. Her account of telling these circumstances was accompanied by much desperation highlighting her preference for closed and safer toilet facilities that she has at home. While at home it would have been nicer if it were a bit more spacious, the family feels they cannot help it as they rent the house (MU-HH1).

An interviewee was approached because of her advanced age and presumably special requirements for safe sanitation. She stated to be using the public toilet as well as having access to a toilet in the 'white people's' office, an NGO (YWCA) funded old people's place where she stays from 9am - 4pm on a daily basis. This is interesting as this is one of only three times in over fifty interviews with marginalized settlers that the activity of an NGO is registered within the fieldwork process, the second one being the Lebara foundation occasionally visiting the settlers at the fishing harbour. The third time that some NGO or not for profit activity has been noted was when interviewing the settlers in Kottivakkam. This involved medical students of the Hindu Mission Hospital who provide a mobile health clinic, yet they come rarely, maybe every 3 months (KV-HH3). From this it can be seen that while the not-for profit or non-governmental work is commendable and provides

some relief, in its design: logistics, outreach and funding, it is unlikely to have the capacity to be comprehensive and include the poor and marginalised when working on its own. Support and care work needs in itself to be supported and carried by administrative structures that provide essential goods or services like water, sanitation, waste disposal, and infrastructure like roads.

Going back to the interviewee, the older woman, it appeared that she was happy and excited to participate in the interview, but her storyline seemed somewhat incoherent which may be due to her being nervous and not remembering in detail what happened some time back in regards to her family history, which is likely concomitant with old age. Yet she firstly speaks about the 'old age home', where she is in the company of about 60 elderly people, and which seems to fill her day and cater for her needs. To reach there she walks about 3 kilometres, and "they provide food, everything there... that is all she does, she doesn't have any income, she just lives off what the NGO provides... What she does is she goes there, has food, comes back and sleeps" (MU-HH2). Therefore it can be seen that for the current needs of the woman the old people's home provides a supportive care facility.

It appears that in the village some effective public-private partnerships are taking place. This can be seen by this interview as well as with another interviewee who stated that the road construction has been paid for with the contribution of residents (MU-HH5), or that the waste collectors operate with payment through a commonly pooled amount of money (MU-VA).

One interviewee lives in a group of hutments on rent, where ten people share one bathroom facility (with toilet), and the children defecate in the open, which poses a great health threat. When prompted on their knowledge of the hygiene awareness campaigns that were held in Mudichur in line with the Total Sanitation Campaign, the status of which was achieved in 2009, the settlers are unaware that these have taken place. This could be because the interviewee had only moved to Mudichur after 2011 from the nearby Tambaram (MU-HH3). Yet this highlights another dimension of a

place becoming and staying open defecation free: the necessity of continuous monitoring of hygiene and sanitation practices and if they are not up to par, intervention in a non-imposing manner is necessary.

In trying to understand the subjective reality of the interviewee, some family circumstances may be helpful. She has been married and has two children, both of which are married. She is separated from her husband who lives in nearby Tambaram. Until 9 months ago she has been living with her son but because of family expansion on his side she had to relocate to her own place. She works as a contract construction worker. She has no TV nor electricity but “she does feel socially included, in this street, and also wherever she lived before, and since they follow a daily routine which is pretty much standard, they just go to work, come back, eat, sleep,... she doesn’t find anything out of her way to do something for other people. But she definitely does feel socially included” (MU-HH3). This situation is that of a manual worker who needs to take one unpaid day of leave when her monthly bleeding occurs. Such a reality does not leave much room for personal investment in upgrading her living conditions, and if the toilet facility was not a given at the place she rents, it is highly doubtful she may have invested the time or funds to construct a toilet, also because while at the respective construction sites where she works, she defecates in the open, and she stresses that she is untroubled when doing so. This points to either, the necessity of toilet provision and use promoted by the public in a functional manner as the poorest may be too busy surviving rather than to have the capacity to invest in their own toilet, or to NGO engagement with the settler in a manner that is fruitful and rewarding to the settler, as otherwise she has no capacity or tolerance to cognitively engage and grow her behaviour.

One interviewee, 56, has been a single mum for 15 years after her husband died “working at a construction area”, to her two sons, now both in gainful employment and having finished school to 12th and 9th grade respectively. She is proud of them. She works as a house help for a Christian family. She has access to a toilet at home as well as at her workplace. An interesting aspect of the interview was that she mentioned

how the little lake behind the houses used to hold clear, drinkable water, however a few years ago it has become more and more polluted. The reason for that, it appears, is the construction of a nearby apartment block, leading to grey water spill overs, as the village does not have a functioning drainage system yet (MU-VA). It is unfortunate to see what appears to be a waste of resources in an area that during dry season is desperate for water.

The search for employment has led one interviewee, now 66 years old, to move from the countryside to Chennai. In the search for employment he has been located centrally for some time to slowly over the years move outward again. In Mudichur he enjoys the last leg of his migration story, only still working part time in central Chennai polishing bronze vessels. He originates from an area in the South of Tamil Nadu state but he was orphaned at the age of 13 and could not make a living where he was, so he migrated to Chennai city. He started working for a chit-fund company but the salary there came without food and accommodation and was too little to make a living. Then he worked at the port but money was also not enough so he changed occupation again. Thus after a few changes of income earning activity he then got married and started working at New Washermenpet for some years, and later moved to Saidapet. By this time his children were all already married. In Saidapet he was living on rent whereas in Mudichur he owns the land on which he has built his hut. He came here 12 years ago. As soon as he moved here he built the sanitation facilities, a toilet and a bathing space. All households have a borewell these days to access ground water for bathing and other things. During the 12 years since he moved here he noticed changes within the village, for instance he saw how the nearby fields aridified which is why people sold them as land to settle on: first hut and later houses. The roads in the area have been recently built, in 2012-13, which saw a contribution of 5000 Rs per household living in the street.

Also changed over the years has that he now has regular access to water, and that the corporation trucks come to collect the waste. This has to do with the road construction, as the neighbourhood is now better accessible with vehicles (MU-HH5). From this it can be seen that physical access may

be the first step to the development of access to goods and services. The story of this settler's life, whose wife passed away four years ago, but who is supported by his children - his daughter's family lives nearby and his sons closer to Chennai - is a tale of someone who was able to survive and grow despite a difficult start. It might have helped that he was able-bodied and male, the latter puts him ahead over half of the population within the local socio-cultural hierarchy. During the interview he seemed content: not only did he enjoy sharing his life story but he also mentioned how he watched the sanitation awareness campaigns on TV, which made him happy. It was visible that he had developed cataracts in one eye, likely to impact his well-being, but from a sanitation perspective he appeared to be in a sound position.

Concluding the Findings from Mudichur

From the interview findings in Mudichur several points can be made.

It has been put into context how people in vulnerable positions such as an orphaned 13 year old are migrating to urban centres for the search of ways to survive, and that at such centres the search for gainful employment is challenging which the frequent employment changes of the interviewee indicate. (MU-HH5)

A picture of urbanisation is painted by the resident who has, over the course of 12 years, seen how urban infrastructure development such as streets has brought improvement in basic services (water, waste collection). Basic infrastructure development is also crucial for non-governmental or not-for-profit organisations to work satisfactorily. An NGO in the village, where basic services needs seem to be met, clearly adds to the interviewee's wellbeing (MU-HH2). Yet it becomes apparent that there is a necessity for continuous monitoring of hygiene and sanitation practices (MU-HH3), because people might forget or be unaware of the threat OD poses to people's health, even if it is children using the toilet in the open. Further, as an insight into the reality of people shows, there is a need for official support in fostering sanitation, as people may be too busy surviving (MU-HH3).

Within the village it appears that villagers are content with the sanitation facilities available to them. One interviewee especially voiced her clear preference for safe sanitation (MU-HH1). Last but not least the interviews have indicated that better resource awareness and management is crucial as environmental protection and conservation could help prevent the loss of resources (MU-HH4).

Madipakkam - Resettlement from Mylapore

This section will first mention the subjective reality of a woman moving to Chennai for work and another one who moved here because housing is cheaper. This is to give an example of settler's subjective realities within the Madipakkam area. Then it will proceed to report on a dynamic interesting at this location: it houses settlers who have been resettled by the government over 20 years ago from an area called Mylapore, which was cleared for railroad construction work. Mylapore is in the centre of Chennai.

It was 14 years ago, when one interviewee moved to Madipakkam from Arani (about 150km west of Chennai) because there was no stable source of income available. Her brother had studied and come to Chennai for work, so she could follow him. Before she came to Chennai she worked as an agricultural help, but since coming to the city she has been in employment as a house help at different houses. To support her children growing up she has been working at up to 4 households. "She says it depends on my smartness, as to how many houses I can get work at" (MA-HH2). Since 6 years she started working for the corporation as a street sweeper. So it seems that her subjective reality in a professional sense is that here she can find better work compared to where she was before and that she has to be 'clever' in her approach to find work. However the street sweeping she engages in can put her into a difficult situation to take care of her sanitary needs, as has been elaborated in chapter 4.3.

One interviewee explains that people move to Madipakkam because the rent is low. She came here herself 12 years ago after her husband died,

with her now 17 years old son. She works as a tailor in Tambaram. There is a toilet in the house and on 3 days of her menstruation she does not go to work. She states that “I can live even without food, but I cannot live without a toilet.” (MA-HH4). She is not aware of any NGO or government support in regards to sanitation efforts. The interview with her is one of two interviews conducted on the other side of the canal running through the village. On the day of the interview she did not go to work because she had trouble coping with the heat. This shows that she does enjoy a certain kind of flexibility to take care of her needs as well as the high value she puts on access to toilet facilities.

An older widow who suffered from high blood pressure and insulin resistance (she had difficulties moving or expressing herself clearly) expounds how she had been living with her family in Mylapore 24 years ago, in a settlement by the train station. She was born, raised and married there. Her son stayed living close to Mylapore until he passed away, and her husband died several years back. She has a grandson living close by who sometimes gives her food. She had to leave Mylapore because her settlement area was cleared for railroad construction: “they were given 500 Rs and they were asked to leave the place” (MA-HH1). Here in Madipakkam she accesses water brought by corporation tankers with the help of neighbours who bring her the water when the lorry comes. She used to have access to a toilet in front of her house but her grandson looked it for reasons not known to her. She has to use the public toilet nearby however she finds it challenging to walk there and admits that if she feels that she cannot, she defecates in the open. When prompted on whether she knows of any NGO or government initiative for support she declines any knowledge of such: she does not receive the old age pension (MA-HH1). The subjective reality of this woman is that due to her medical condition she is very limited in her movements and in her ability to take care of herself. She depends on the goodwill of her neighbours to survive and seems very limited in her capabilities.

One interviewee, herself born in Adyar, had been married to someone living in the area of Mylapore (where she then lived) until they were to move to Madipakkam (20 years ago), into a house in this area allotted by the government, as the railway station in Mylapore was being constructed. To her the quality of life has not changed with the resettlement. Based on the held property in Mylapore settlers were allocated similar houses (MA-HH3). While she is not aware of NGO activity in the area she sees the government promoting the initiative of building toilets for households. She mentions that they have visited and surveyed the area in regards to availability of household toilets. This was the result of the councillor coming and inquiring among the residents what their needs are, and “they all said they needed toilets. So... he will take it forward” (MA-HH3).

“She says that now there is a sea change of difference, in terms of having a toilet and not having one before. So she says that it definitely impacted my well-being, especially given that if I did not have a toilet I’ve had to carry a whole bucket of water and go to the end of the street to use the toilet. So in terms of convenience and also you know the quality of life, now it is much much better she says. And also that many people have now begun to realise the importance of building a toilet. In their own homes.” (MA-HH3)

This indicates the change of perception taking place in the locality. Since people are asking for toilets from their councillor, it is likely that they will value and utilize them. Her understanding of sanitation is well informed, possibly because her husband’s work is involved in the construction of septic tanks.

The interview with a 68 year old man revealed that he had been more comfortable living in Mylapore, where he lived before resettlement to Madipakkam 38 years ago, as part of a slum resettlement project, because he had access to appliances for instance a 24/7 water tap, which is not available in this area of Madipakkam. So he needs to get water from the corporation tanker when it comes. His house is next to an open field, which was visibly littered, prompting the question about waste management in the

area. He puts forward that he drops his waste in the truck that comes to collect it, “but there are some houses who just dump it here... this area was left out initially for building a school. But the project probably did not take off” (MA-HH5). Again, this interviewee had not heard of NGO nor government initiatives to promote or encourage safe sanitation, possibly because this interview was located several streets away from the previous interviews, on the ‘other’ side of the canal.

Lighthouse Settlements

As mentioned in chapter 4. 2.4 there are squatters close to the flying train line, close to Marina Beach. These squatters have been asked to vacate where they were previously living, to clear the area next to the canal, so they relocated here which is still next to the canal, just a bit further on. Caused by the land clearance request the subjective reality of the settlers is one of feeling unwanted, inadequate and voiceless or not recognized as human beings. From a public perspective this is indicative for the lack of government commitment to find an appropriate and supportive livelihood solution for its poorest citizens.

Thoraipakkam

The case of the settlers next to a highway toll station in Thoraipakkam has been elaborated in the light of them not having access to adequate toilet facilities in chapter 4.3. The issue at hand is that they have not been acknowledged in their existence nor their rights as human beings by the authorities, which have dislocated them for the highway construction without adequately compensating them, so it appears, as they had not been resettled but they had to build up their shanties along the newly built road.

The subjective reality the interviewees offer is as follows:

Apart from the lack of sanitation facilities, the settlers have a problem with rats, so they can’t store food over night, and they have snakes coming into their houses to eat the rats caught in rattraps. The children have

problems sleeping at night because of the mosquitoes and it was said that all the men drink alcohol because of a nearby liquor store, leading for instance to domestic abuse (TH-HH2).

Therefore it can be seen that the livelihood circumstances of these settlers are rather depressing with constant exposure the health risks and negative stimuli such as air pollution from the highway, biting insects and little escape from climatic issues such as heat, rains or storms. All of these stimuli negatively impact and restrict the conscious mind and a person's capabilities for well-being.

Fishing Harbour Settlement Area

Also covered in more detail in chapter 4.3, the settlement area by the fishing harbour is inhabited by people the government has 'forgotten' to resettle since 9 years, and since 4 years the public toilet had been demolished. When asking a woman how the government or their councillor responds to the situation she states that: "(t)hey have complained about the lack of a toilet several times, but he doesn't listen to them, apparently, as in no action is taken. Now that this land has been cleared for government use, as in the road expansion, apparently no more toilets can be constructed on this." (FH-HH1). This means that the people are left in a precarious situation because of governmental city development action at this particular setting, which has not inclusively considered the needs of the poorest settlers. It might have been the intention to resettle all the settlers after the demolition of the corporation toilet, yet given that open faeces provide a serious health hazard, the toilets should have been demolished only after the resettlement of all settlers.

One interviewee states that she has been involved in some contact to the authorities: some settlers have successfully asked for a corporation toilet, built 2-3 months ago. "Before that they used to do it in the bushy area, but then given that the factories are coming here and all of that, they have requested for the corporation toilet" (FH-HH4). This further shows some

agentic behaviour by the settlers in that a toilet has been successfully requested for the people of that area. This begs the question why some settlers are successful in their asking for public services, and why others, who are maybe less able to articulate themselves, are not.

Concluding the Inquiry into Subjective Realities

If one may draw a conclusion from the cases discussed here it could be that voluntary migration for employment may yield higher satisfaction and an increased sense of agency compared to planned resettlement, which appears to work for the settlers to a satisfactory degree. The dramatic disruption to the feeling of agency and a person's capabilities is the subjective perception of being neglected and violated in one's livelihood. Public and private development efforts are to place particular attention to the most vulnerable and most likely to be violated, as they are to be seen as the benchmark of developmental advancements and very important actors to ensure human security.

The following section investigates the effect of structural violence on the capabilities of people living in marginalized settlements.

5.3.3 Structural Violence

“By structures we mean social relations and arrangements...These structures are violent because they result in avoidable deaths, illness, and injury; and they reproduce violence by marginalizing people and communities, constraining their capabilities and agency, assaulting their dignity, and sustaining inequalities.” (Rylko-Bauer and Farmer 2016)

This section addresses part of research objective 4 (Examine the relationship between behaviour, consciousness, and mental endowments),

by linking some findings discussed in the previous section (5.3.2) with the discussions on the conscious mind system. This will refer in particular to the “unconscious process of avoiding ‘negative affective arousal’” and a person’s “cognitive resources” (see section 5.2.1).

The question to consider here is to what extent the people might be able to have a Capability for Agency or a Capability for Well-being (discussed in 2.1.3).

Awareness Restricting Environment

Some circumstances discussed before in the findings chapter (4) are depressing and restricting the conscious mind system of people. Such are for instance being forcibly displaced, only to resettle a few meters down the street as squatters near the light house MRTS station have experienced. The emotionally unsettling experience of being forcibly asked to vacate their living space takes away people’s well-being capability and with that their agency capability, because the violent process of resettlement is a negative experience, and the “unconscious process of avoiding ‘negative affective arousal’” is limiting a person’s “cognitive resources” (see section 5.2.1) to engage with the situation (until a new learning experience occurs which may change the mental disposition). This is how structural violence can stifle a person’s functionings.

A similar situation is experienced by the settlers next to the high way toll station in Thoraipakkam, who were forcibly resettled during the high way construction, and while they saw surrounding infrastructure being developed, they were denied the freedom of dignity and are forced to defecate in the open, in full view of surrounding apartment blocks. Again this situation, the shame and humiliation experienced also due to lack of recognition, and inhumane living conditions (see chapter 4.3.3) violates the conscious mind system and restricts both well-being and agency capabilities.

An inhumane living environment, full of disease vectors (for instance rats, snakes or flies), at hot and humid temperatures, in a challenging living

environment next to a highway: noise, pollution, lack of privacy, security; means that the conscious mind system of the people living there is constantly challenged in ways that allow little room for reflective and thorough system 2 thought processes, which are needed for agency capabilities. This implies that people are not in the position to express the precariousness of their situation. This is why it is particularly necessary for public institutions to address the problem and end the structural violence in this regard.

Freedom for Agency

Two examples for agency were given in section 5.3.1 when the case studies of a social worker and a government official were compared. What is notable is that these individuals had 'freedom to act'; in both cases they were in a position to make social learning experiences which had an affirming outcome in the form of being recognized. Linking this to the conscious mind system discussion (5.2.1) it may be deduced that their affirming learning experiences extended their cognitive capacities insofar that they could continue to engage in their ways, which led to a career of a social worker on the one hand, and winning of the total sanitation campaign on the other.

After including into this thesis a call against structural violence and for the freedom of agency – as well as for an agency allowing environment – the section below is returning to the urgent need for sanitation in the visited settlements. It is to discuss the possibilities and kinds of development interventions desired to assist wellbeing capabilities of the settlers.

5.3.4 Discussing the Possibilities and Kinds of Intervention

This section sets out to discuss the locations covered in the study in regards to the previously documented sanitation reality and suggests an assessment, from the data obtained in line with the available literature, how development interventions could take shape. Figure 5 shows that depending

on the sanitation reality, when and where open defecation is practiced, it would pose a risk to human security. The socio-political environment of the locations visited has been approached through the lens of context and degree of urbanization. The physical and mental health of some interviewees is pictured through describing their subjective reality: the perceived realities. This is put into context within the wider circumstances, trying for realistic, but 'thinking out of the box' possibilities.

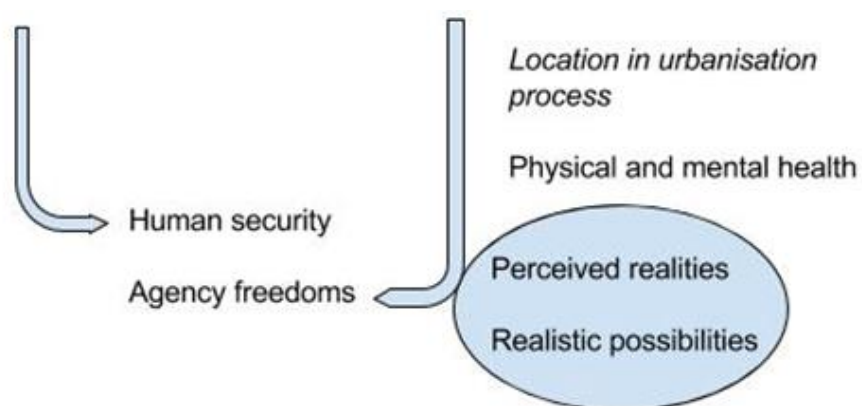


Figure 5: Sanitation Reality versus Socio-political Environment. Source: Author.

People think and operate normally within the knowledge 'box' they have: the neural networks of the conscious mind shaped by past experiences and behaviour with repeated behaviour being more pronounced and accessible, because it comes with 'cognitive ease'. Emotions, a great tool to guide human survival, sometimes can cloud the judgement and hinder or detract behaviour, which is the result of the brain subconsciously 'framing' and categorising phenomena occurring to the conscious individual.⁵⁸ To resolve the sanitation problem, and to navigate around emotionally diverted actions, perhaps thinking in unconventional ways can offer a solution.

The following discusses the findings of each location with respect to which sanitation solution approach might be fitting. This will take the order of discussing occurrences of open defecation as detailed in chapter 4.3.

⁵⁸ As covered in 5.2 (Discussing behaviour and consciousness).

Thoraipakkam

There is some sentiment in the roadside community in Thoraipakkam that they are overlooked and not recognized as human beings. The settlers are practicing open defecation in adjacent grassland. It appears that some engagement with the community on the lines of a continued awareness creation would be welcomed as some members of the community clearly appreciate engagement and especially recognition. While simple solutions like burying excreta with ash could help in curtailing spread of pathogens, the question is also in regards to how to help with aspects such as preservation of dignity and bodily integrity. An efficient triggering within the settlement in regards to sanitation needs, as well as awareness creation and triggering of the surrounding community: apartments, shops, toll station workers, and the Amma clinic, to find a feasible solution for the community would be required, especially as the surrounding community are all impacted by pathogens released into the environment. Since everyone is normally operating within their 'cognitively easy' zone of thought unless challenged by pressing circumstance or intentionally engaging with a resourceful thinking and process, paying particular attention to those most vulnerable, an appropriate 'triggering' of all stakeholders involved with this area is a way forward. It is helpful that some toilet technology solutions as proposed by Sulabh International can deliver inexpensive pit latrines that do not require faecal sludge removal. If some of these toilets may be positioned at the settlement, this would help the settlers as well as the larger community in a significant manner.

Fishing harbour

The people in the settlement by the fishing harbour are in a state of limbo, as authorities had promised them to be resettled over a decade ago. The road expansion in 2012 saw the demolition of the public toilet at one end of the settlement, which led to a return to the practice of open defecation. A solution to reduce the practice of open defecation here could be, if the settlers would agree to it, a relocation of the settlers who are further away

from the public toilets to some vacant houses closer to the toilet. However this would only partially reduce the problem, as the toilets are only accessible during daytime. And for such activity to take place (moving a few houses within the settlement), the residents would first need to be made aware of the risks open defecation poses, which, if it was to be successful an approach in line with the concept of 'community led total sanitation' would need to be taken, by some actor who can communicate with and regularly visit the community.

Kottivakkam

The situation in Kottivakkam is such that women are able to use the public toilet whereas men have to defecate in the open. It appears that this location would benefit from some 'community led total sanitation' initiation as the issue is already halfway solved with the availability of functioning and utilized toilet facilities for and by the women, whereas it is the men who need to be convinced that their openly defecating poses a risk for the entire community, especially the children. A skilled facilitator for the CLTS campaign will be able to evoke disgust and fear among the men for them to realize that they are at risk of digesting their own or other's excrement and that their children or grandchildren are at serious health risk, especially due to the increase of population in the area. The community is represented on the Panchayat representative board, which holds monthly meetings and which should be one channel through which the issue of open defecation is tackled. Another could be through community pressure or even involvement and 'calling out' of defecators by the children.

Street Workers and Public Toilets

According to Chandrababul (2015) there are a little over 900 public toilets in Chennai, not adequate by far for a population, which is estimated at 6.5 Million people. It is evident that particularly the poorest and most vulnerable citizens, who may live in slums and work on the street, are confronted with the challenge of finding a place to safely defecate.

In an attempt “to erase the images of dirty public toilets in the city” (Stalin 2016), 183 self-cleaning e-toilets have been installed within the city. Yet they “come at a cost. Each of these smart toilets cost around Rs. 5 lakh, add to it, a monthly maintenance of Rs. 5,000. But the government is proud to have spent the money” (Stalin 2016). The question is whether the expenditure for these toilets will be sustained over time. And while it is useful that customer feedback and availability of toilets, or the need for constructing a toilet, can be given and located through a smartphone app (Poorvaja 2016), which is not to be argued with, there comes a degree of exclusion as not everybody is able to own or operate a smart phone. Also, an epistemological critique of the framing of this policy initiative may be voiced. The aim of cosmetic improvement within the city is not to be neglected, but far more important would be to protect the citizens against pathogens stemming from open defecation. The excitement and feeling of acknowledgement that comes with technological advancements and achievement, is a good way to promote and address problems such as sanitation, yet the costs to maintain the facilities imply that they are only part of a more comprehensive solution needed.

Also the problem with toilet facilities being provided by an external actor and giving no responsibilities to settlers themselves means that the reliability of the facility is dependent on this external player and hence may be reduced. The dependency on public toilets becomes tricky in cases when toilets are suddenly unavailable to the citizen as they are the responsibility of the provider. Such scenario became real, yet not involving the ‘smart’ but other kind of toilets, when a publicly accessible toilet in Royapettah, right in the centre of Chennai, was locked due to insufficient maintenance. An immediate consequence was that some people defecated next to it. The official response to this has been that civic vandalism and a nearby overflowing sewer have caused the disuse of the facilities (Padmanabhan 2017). The natural pressure and the helplessness over a loss of a place to defecate may have led people to spoil next to it. Obviously, this poses a great risk to human security but it also highlights the urgency for public toilet maintenance. Such urgency is highlighted in the same area of Chennai, in

Bharati Salai, as within a 1 km section there are 4 public toilets available but 2 are dysfunctional and their unhygienic state is a public nuisance, especially as some are next to the bus stop (Manikandan 2016). Further, it is reported the problematic toilet situation at the central Chennai Railway station. With nearly 400,000 people passing through the Chennai Central Railway station every day it is surprising that not enough adequate toilet facilities are available in the station and around the area, leading to open defecation on the pavements around. Also some mobile toilets were “placed on the pavement many months ago. But they were just gathering dust and yet to be commissioned” (Manikandan 2016).

Sriperumbudur Village and Sriperumbudur Roadside

The situation in ‘Sriperumbudur village’ in regards to access to sanitation was that settlers either had private sanitation facilities connected to a septic tank or defecated in the open. One household was in the process of building a toilet, another voiced that he would like to have facilities, but to others, open defecation appeared the norm. A possible solution for the village settlements would be Sulabh International style toilets, which would be a low cost solution, yet awareness creation and participatory triggering along the line of Community Led Total Sanitation are necessary to bring the village on board.

5.4 Right to Sanitation! Law for Sanitation?

“If more equitable rights, like opportunities for housing, sanitation, safe drinking water, electricity, education and health care, were written into laws, then many group claims for acquisition of assets could be successful.” (Fennell 2010: 181)

Given the gravity of consequences unsafe sanitation practices lead to, endangering human security, well-being and agency, legislative measures to promote and assure safe sanitation practices are crucial. On the 28th of July 2010, the United Nations (UN) General Assembly adopted the resolution of the human right to water and sanitation (UNDESA 2010), which India voted in favour of (UN 2010). On 17 December 2015 (resolution 70/169) the General Assembly distinguished between the human right for water and the human right for sanitation (WASH-United 2015).

An effective right to sanitation in the local context is important as given in an example by P.B.Anand (2007: 243):

“As Nussbaum (2000) finds in the case of women’s groups in the Mahboob Nagar District in the arid region of Andhra Pradesh, where women are able to demand water and sanitation, they are able to assert themselves to pursue economic freedoms. This account suggests that a universal right, which may be quite ineffective and unnecessary for the non-poor, can help the poor and weakest members of the society to make their claims in a society with appalling levels of inequality.”

Thus, having the right to sanitation adopted by the UN is one step in the right direction, yet an important factor is to what extent national bodies ensure the right to the nation’s citizens. “*Sanitation* in India is a state subject” (Satish 2017 emphasis in original). This means that it falls into the Tamil Nadu state’s responsibility to ensure sanitation provision for the citizens of the state. This has been attempted through numerous hardware, toilet construction policies: “(s)ince 1986, India has spent over \$3 billion on constructing toilets across the country” (Sreevatsan 2016), yet it has not been successful in eliminating the practice of open defecation. And while government initiative to provide sanitation tries to address citizen’s right to sanitation, there is a grey area of urban dwellers who live and work in the city, however cannot assert their rights as citizens because they do not legally own the land they live on. In this regard Satish (2017) states:

“The provisioning of basic sanitation should be de-linked from the issues of land tenure. Every urban dweller should be provided with minimum levels of sanitation, irrespective of the legal status of the land in which he/she is dwelling, possession of identity proof or status of migration. However, the provision of basic services would not entitle the dweller to any legal right to the land on which he/she is residing.”

There is the necessity for a law requiring the state government to provide unrestricted sanitation facilities in settlement areas, irrespective of settlers’ land tenure. Thus evidence for requirement of providing sanitation should not be documentation of residency but need of the vulnerable. This would imply a shift from a masculine policy strategy⁵⁹ to a feminine, caring, approach.

There is other precedent indicating that while laws are important, an understanding of practiced institutions and alternatives to endangering behaviour is necessary, for instance the rehabilitation of manual scavengers. This is because even though the clearing of human waste manually has been prohibited by Indian Parliament in 2013, the employment practise persists (HRW 2014). This indicates that while laws are instrumental as behavioural guidelines, they need to be developed simultaneously with a supporting policy framework that is human centred and that promotes human freedoms and capabilities for development.

5.5 Intelligent Altruism

Given the public dilemma of people marginalized and kept living in undignified conditions, this work proposes an intelligent altruism as a guiding principle for development policy and practice. The name of this principle is not important, one could also call it ‘altruistic intelligence’ or ‘inclusive planning’, and it describes essentially the same idea as the capability

⁵⁹ As discussed in 2.1.2: ‘Masculinities of public policy’.

approach, just that it is more tangible and practical to understand as both terms can describe behaviour, which development policy strategies should be shaped by. Public policy makers are to be considerate of public policy recipients and thus craft the policies in an altruistic and intelligent, freedom allowing way. And furthermore with one expression (intelligent) depicting 'system 2' mode of thought (the slow, calculative one), the other (altruism) is considerate of 'system 1 thinking' (intuitive, fast, reactive), which is important because inclusivity, altruism, or public wellbeing are indicative for social safety. This further means that irrational and violent behaviour of members of public could be averted (unwanted system 1 - led behaviour), because someone who is safe does not need to go to desperate measures for survival, like stealing food.⁶⁰

The capability approach (hereafter CA) is of significant importance here because it has an emphasis on the human mind's necessity for freedom, which implies both, the freedom from fear and the freedom for creative thought. This can also be expressed through the need for capabilities for wellbeing as well as capabilities for agency. Within public policy this is to be ensured through policies protecting the individual from physical and emotional harm (i.e. at a sustenance level, ensuring wellbeing), but allowing freedoms of expression, creativity and learning (i.e. freedoms of the spirit, of happiness and personal development – the agency aspect). This has been previously stated by P.B.Anand (2007: 240): "A CA suggests that we need to examine issues related to institutions that define both basic as well as substantive freedoms and whether and how these are inter-related." In this manner a duality of freedoms is established, perhaps similar to the duality of the human mind (Kahneman's system 1 & 2 of thought) and certainly similar to what can be called a duality of human needs: the need for physical safety on the one hand, and the need for personal growth on the other, which are driven and consciously 'registered' through emotions. An example for emotions is the feeling of necessity for a doing or being pre-

⁶⁰ The author recognises that this is a conjectural statement which may need to be discussed and validated, yet for the purpose of the argument in this section, the statement is convincing.

achievement and the feeling of accomplishment or satisfaction post-achievement.⁶¹

The discussion on the conscious mind⁶² has indicated that schematic thinking is a matter of learning a skill, whether it is the study of economic thought or playing the piano. Such 'rubrics' of thought are taught by society according to their believed 'usefulness', and with the fall of the iron curtain in 1989 the neo-liberal rubric of economic thought seemed justified, because it appeared the only economic system able to ensure human survival. Yet a focus on wealth creation is an indirect and incomplete route to human well-being; for human flourishing a policy focus needs to include an emphasis on human safety and well-being: a focus on inclusive growth. But what does that mean? For instance, it is misleading to assume that safety and well-being is implicitly given by monetary capital accumulated, as this ignores the broader reality of human behaviour - as directed by human thought - which operates in different systems and is receptive to emotions.

Fennell (2010: 174) explains that:

"Neoclassical thinking still maintains that the current rubric of capitalism ensures that the market is completely removed from the social dimension, is devoid of moral sentiment and is completely disjointed from culture or tradition".

And while Adam Smith is often referred to as the father of capitalism,

"(t)his rubrics of economics followed today has moved far away from Adam Smith's concerns with the moral and deems that the market is able to separate the social system from the economic sphere. Within this rubric, any intrusions by social, moral and affective concerns are viewed as irregularities in the economic system." (Fennell, 2010: 174).

⁶¹ The duality of human needs is an original contribution of the author, the elaboration and validation of which may also need to take place within a different context of conceptualization.

⁶² Covered in Section 5.2.1 (Models of environmental stimuli and behavioural output).

The reason why this thesis promotes a rubric of 'intelligent altruism' to enter public policy is to reconcile an economic thought that separates the social from the market by highlighting the interconnectedness of rubrics (economic or social) within the conscious mind system, for that the calculative system 2 of thought depends on the intuitive system 1.

The 'intelligence' of this (capability) approach to policy and human behaviour has its foundation in Sen (1984a: 289 in P.B.Anand 2007: 234): 'the ultimate guarantee for individual liberty may rest not on rules for social choice but on developing individual values that respect each other's personal choices'. The individual disposition of respecting and valuing the 'other' however is very much rooted in one's upbringing and educational experiences and whether the human conscious mind system has developed mental faculties (neural systems) to be 'intelligently altruistic' in human interactions: caring, supportive, guiding, but allowing or promoting freedom for creativity and capacity growth.

Another aspect of such human interaction situation is the underlying power dynamic of the actors involved. Applying a capability approach or being intelligently altruistic means to consciously surrender any attempt at imposture and being task focused without ulterior motive. Given that the Panchayat President of Mudichur⁶³ was an independent candidate and not belonging to any of the political parties, made him independent from party politics. This meant he was able to focus on the 'task' of eliminating open defecation. Unfortunately in most cases a political candidate will be tied to party politics or is in need to attend to pre-election promises, diminishing his or her power for agency.

P.B.Anand (2007: 240-241) refers to Sen (2004a: 32) when pointing out that a human right alone is not enough; it also needs an adequate mechanisms to ensure realization of the right through the agents in any position of power. For instance he refers to the right to water:

⁶³ referred to in 5.3.1 (Mudichur – Panchayat President).

“A right to water in such a context seems to emphasise: (a) that the community (represented by state institutions) has a corresponding duty to enable the person to exercise such a right; (b) that equality is recognised as an important value (along with other values such as efficiency and sustainability); and (c) in as much as access to water is an important ingredient of right to life with dignity, the obligation to provide access to water is also a universal obligation.” (P.B.Anand 2007: 241).

In regards to the right for sanitation this means that a) the state institutions are obliged to provide people the possibility of safe sanitation, meaning not only ‘hardware’ but also the necessary ‘software’ training, b) that equal, sustainable and effective access is to be given, and c) that provision of safe sanitation is seen as a universal obligation, irrespective of land ownership.

And to reiterate how P.B.Anand (2007: 244) distinguishes between a ‘right’ to water framework versus a CA framework: “The focus of CA is to expand substantive freedoms”. This helps to clarify the purpose of the thesis, which is to argue that an understanding of the human mind helps to better guide how substantive freedoms can be broadened.

This section started with a call for policy makers to design policies in a manner that is altruistic and intelligent, as this is where the focus and purpose of the thesis lies. The attentive reader and social scientist may find however that the capability approach (in the repackaged form of intelligent altruism) is much more than a framework for policy making, it is a behavioural guideline for anyone in a position to influence another, for it includes the parameters that allow or negate life⁶⁴.

⁶⁴ This links back to the discussion of the conscious mind system in 5.2.1., of influences that stimulate or restrict the human mind.

5.6 Chapter Conclusion

This chapter started with an investigation into the human conscious mind. Frameworks depicting the impacting effects on the mind are explained. These are illustrated with the findings generated from the fieldwork in the Chennai Metropolitan area. Through highlighting the realized capabilities of the Mudichur panchayat president and the social worker of Perungudi conditions for agency are explored. In both cases these have been challenges, which the interviewees were able to meet. In the inquiry into the subjective realities of migrant settlers the dimensions of voluntary migration, organized resettlement and forced displacement are looked into. Bringing these together with the findings from the literature of research on sanitation and development it is evident that fundamental measures for human security are a necessity. While the process of achieving such measures for human security is neither straightforward nor simple, there are precedents of sanitisation successes, through organisations such as Gramalaya, Sulabh International or following a Community Led Total Sanitation approach. The point of emphasis is at this point that there is need for a public determination to leave no one behind: not the ones left unattended to by a public resettlement scheme, not the people displaced because of a road expansion, not the men because they can bear the burden of OD, not the migrants working as professional cleaners in local industries, not the street cleaners, and also not the waste pickers. The conscious mind system of all these individuals is violated against each time they are forced to practice unsafe defecation. This in particular is the original contribution the thesis makes in this chapter, by drawing attention to a 'structural violence' incurring to the marginalized citizens. The last chapter will summarize the findings and conclude the thesis.

6. CONCLUSION

The study has found that the means to effectively eliminate open defecation in the Chennai Metropolitan Area would be through scaling up of Gramalaya, Sulabh International or Community Led Total Sanitation practices, however given the fact that there are location specific conditions, the scaling up can only work if there is enough flexibility in context specific approaches. The circumstances of the settlers in Sriperumbudur are different to those in Thoraipakkam or those at the Fishing harbour. This calls for flexibility in administrative approaches in dealing with open defecation and understanding of realities on the ground to effectively tackle the issue.

This research sought to assist the solution of the problem by giving examples of the reasons for the endangering practice of open defecation. What needs to follow is public engagement through intermediaries such as Sulabh International or the local NGO Gramalaya with the communities to agree on sustainable toilet solutions. Engagement with the settlers, when done in a respectful and supportive manner, enables the creation of new mental and behavioural options i.e. behavioural learning, which is a prerequisite for agency.

This final chapter will summarize the findings of the study by stating the ways in which the thesis contributes to and advances the body of knowledge. It will further highlight how the research questions have been answered and the objectives achieved. The next section states the way forward for the research, followed by some closing remarks.

6.1 How this Thesis Contributes to Body of Knowledge

The study advances the body of knowledge with an unusual literature foundation, some theoretical innovation, a methodological contribution and empirical findings:

Literature Contribution:

Sanitation within the field of development studies is a widely discussed topic and many new studies are continuously conducted and published. The original nature of this thesis is that study complements current development literature on the issue of sanitation with neuro-scientific /behavioural economic research. In particular, the innovative nature of this study is the focus on the conscious mind, and its capacity to develop healthily according to challenges faced within living environments. The study has gathered data through a holistic lens of what can impact on the human conscious mind in regards to the sanitation situation of the settler (migration, employment, sanitation access, emotional disposition). The research compared situations in 10 different settlements to highlight how different living environments and conditions influence the human conscious mind and individual freedoms, especially according to emotional responses of un-freedoms of the settlers. For instance, lack of safe sanitation was perceived more problematic the more urbanized the area was. Yet other settlement conditions were demarcated by the official recognition of the settlements, which impacted the degree to which public services were provided. In this sense it can be seen how the study extends the development literature on sanitation by including a vision of conscious mind development according to capabilities and freedoms experienced by the settlers.

Theoretical Applications:

What makes this study innovative is that it has used a Critical Theory angle in the context of a development study topic. By incorporating consciousness research into behavioural models the Critical Theory approach has gained a more elaborate foundation. It was drawn out through the 'lifeworld – agent – behaviour model' and the 'conscious mind – stimulation – output' model. This 'agent-lifeworld interplay' mechanism described through the conscious mind research has been contextualized with data gathered from the field research in Chennai.

In particular, the research has highlighted a number of analytical tools to better the understandings of the concepts of capabilities, freedoms and agency. These are

- Map of neural pathways of learned and applied experiences orchestrated by emotions: the conscious mind (Damasio)
- fast and slow thinking (and doing) systems (Kahneman);
- nested BrainMind hierarchical organization (Solms and Panksepp) of thought and behaviour

Such help to understand that freedom-allowing and altruistic public policies are needed to allow people to the greatest extent possible to be agents within their 'lifeworlds'. In this regard Amartya Sen's notion of well-being capabilities and agency capabilities have been discussed and applied in chapter 2.1.3 and 5.3.4 respectively.

Methodological Contribution:

The research has applied rapid appraisal techniques similar to the rapid rural appraisal approach of Chambers (1981), and was assessing different location settlements (within one metropolitan area) to investigate real life scenarios the urban poor are faced with because it sought to emphasise the differences of the poor according to livelihood and 'lifeworld' context. The approach of rapidly (but carefully) assessing and comparing 10 different settlements could be termed of innovative nature as it was not taken from a previous study but derived out of the objective to pursue comparative research.

The thesis makes a minor contribution to the application of the Capability Approach by using a simple method of valuation in the analysis of the discourse documented during data collection. The values given to assess the statements were positive or negative and differentiated between a single stress and an emphasized stress of a situational evaluation. By assigning such numerical values (-2, -1, 0, 1, 2) to the findings a clearer summary and presentation of the findings has been possible.

Empirical Findings

The empirical finding from the field study in Chennai show that not only is open defecation practiced even in the city centre out of mere necessity, but it also highlights the multitude of realities and the hardship: physical and psychological difficulties that the peri-urban poor are faced with in regards to their available sanitation and which restrict human capacities for wellbeing.

For instance the sanitation provision at the fishing harbour settlements was inadequate because the next public toilet is far away and only accessible during daytime. The hardship of open defecation by the beach has been documented.

While the public toilet facility at the lighthouse settlements was voluntarily maintained by a member of the community, access to it is also only during the daytime, a restriction which is untenable and leads to hardship and inconvenience.

The public toilet facility at the Kottivakkam settlements was well maintained and clean but only used by women, meaning that men were forced to defecate in the open, implying avoidable hardship, especially for the elderly or ill. This evidenced a gender specific differentiation.

While each hut in Perungudi Medu had access to a toilet shared between a small number of families, there was some variation in terms of access to water (huts who had a tank in their vicinity would get metro water, others had to buy water from the households with tank or the shop). Some households were clearly disadvantaged.

The settlement on cantonment land had all day access to a poorly cleaned and badly lit toilet facility, and at nighttime violence through alcoholised men was stated as a problem. This evidenced some degrading and intimidating conditions, which the vulnerable were exposed to.

The public toilet facility in Madipakkam appeared clean and appropriate; however evidence stated the risks of going to the facility as stray dogs have bitten someone. And a street sweeper stated her struggle of finding a public toilet during working hours, which is especially problematic when she is menstruating.

A settlement that was not publicly recognized was the roadside settlement in Thoraipakkam, which had been misplaced for the highway construction and which does not receive public services, meaning that open defecation took place adjacent to apartment blocks. The mental hardship of the settlers has been documented.

The village of Mudichur was declared open defecation free in 2008, yet it was documented that settlers would allow children to defecate in the open, and the settlers had a particularly hard time as safe sanitation at their workplaces was not available, meaning that open defecation was practiced also at the risk of hurting one's feet. Also the faecal sludge collected from the septic tanks of the households was not disposed of safely but dumped at some open space, which implied release of pathogens into the environment.

A village between Mudichur and Sriperumbudur town saw normally practiced open defecation as well as middle class citizens who would enjoy living in the countryside with their own private toilet facilities (connected to a septic tank). While open defecation was seen as normal here, there was evidence suggesting that with increasing income, people would gradually upgrade their facilities.

The settlers living on government land at the margins of Sriperumbudur town stated that as the land they live on was not their own they were not in the position of constructing toilet facilities, also as most of the settlers had been using the open toilet for all their lives. Interestingly one person stated to be using the next public toilet, despite it being some distance away and unhygienic, because she had experienced 'closed defecation' from where she lived before marriage.

As can be gathered from the findings, each location requires individual assessment of sanitation needs and circumstances, as the way public service provision varies from location to location. This serves to evidence that a one measure fits all approach is not helpful and that it is particularly the situational deviations from the norm for which safe sanitation solutions need to be found. Yet it can be concluded that acts of structural violence are being committed against the vulnerable.

6.2 Research Questions/ Objectives Addressed

6.2.1 How Research Questions Have Been Addressed

Listed are the research questions with a description of how and where they are addressed in the thesis.

I. To what extent does the sanitation situation of poor households in peri – urban Chennai pose a risk to their human security and agency?

The fact that poor households have to revert to open defecation even in the city centre evidences their human security is at considerable risk. This has been explored in chapter sections 4.2 and 4.3. The impact on human agency has been investigated in chapter 5. Some conclusions made here are conjectural since the study did not employ brain scans to measure neural activity nor were psychological intelligence tests administered on the research participants but such ‘masculine’ measures were not necessary to establish the argument. The chapter argued for a mechanism innate in humans because of their survival instincts that shows how agency can be encouraged or discouraged by environmental stimulations to which people instinctively respond. This has been explained in the chapter with Kahneman’s mode of thought (fast and slow) and the conscious mind system of Damasio indicating that if humans are forced to think ‘fast’ there is little room for thinking ‘slow’, which is where Sen’s definition of agency is situated.

The space for thinking slow is given when people do not need to experience fear or shame, when they have the freedom to think reflectively and to be creators of well-being within their own lives. In this regard unsafe or restricted sanitation solutions pose a great risk to human agency, as chapter 5 has explored.

II. What are the dimensions of psychological and agency freedoms of the people in such contexts and their consequences?

This research question has been answered through the following sub-questions:

- **What access options for defecation are available? How can these be evaluated using an understanding of capabilities and freedoms?**

This research question is addressed in chapter 4.1 and 4.2 which lists the findings of the sanitation situation found at the different locations visited. Four toilets scenarios are indicated which are the private toilet, a toilet shared between families, a public toilet, and open defecation. It is highlighted that at 5 out of 10 locations open defecation is habitually practiced and that public toilets provide a limited possibility for human waste disposal. A simple content analysis tool is employed. The content analysed is the discourse provided by settlers. Here values are attached to the statements made by settlers, according to the emphasis expressed in their statements, for instance in regards to cleanliness of their space of human waste disposal. In this manner an assessment of the freedoms (or the lack thereof) from the discourse provided by the settlers is sought.

- **How does one deal with what is available? What is the impact of limited capabilities or freedoms on the individuals or community?**

The question is also answered in chapter 4 by discussing the data collected to how the settlers deal with the sanitation situation available to

them at home or at their places of work. This sees open defecation regularly practiced, endangering individual and communal well-being. In particular it endangers the psychological well-being of the people, diminishes their dignity and forms a danger to their mental health.

- **Why is the situation as it is? Which ‘forces’ restrict or allow individual freedoms and choice?**

This became evident through the interview process, documented in chapter 4.2, when it emerged that:

- settlers lost their toilet facility because of highway expansion,
- settlers had to resettle because of highway construction,
- lack of land ownership would prevent the consideration of constructing a toilet,
- the community saw it appropriate to reserve toilet utilization for women and let men defecate in the open.

Therefore it can be seen that the open defecation practice is influenced by public construction measures, formal and informal institutions that are restrictive.

- **To what extent does the situation pose a risk to the people’s human security and agency?**

This question is answered (in section 4.2) given the data findings indicating where open defecation is habitually practiced. This is from the city centre to the peri-urban areas, and thus posing an imminent threat to people’s human security. Not only their wellbeing freedoms are diminished given the lack of dignified toilet structures, but also their agency freedoms are negatively impacted. This is further addressed in section 5.3.3 (Structural violence).

- **What intra-household or circumstantial dynamics might have impacted the interview?**

Some more detailed discussion is given in the reflections section 3.2.4 and partially when discussing the findings in chapter 4. It is clear that the interview process is influenced by circumstantial dynamics especially when private issues are covered that females may not be comfortable to speak about in front of men within the community (SR-HH4) and vice versa (AL-HH2). These dynamics have been acknowledged.

- **What role does education in behaviour play in behavioural choice?**

This question is addressed throughout the thesis; in chapter 2 when discussing the importance of community led total sanitation campaigns where ‘triggering’ of participants facilitates participant learning; in chapter 4, when analysing the findings, with a particular example found in chapter 4.3.3 (Integration and Outreach – Sriperumbudur settlements: a woman choosing a dirty public toilet over the commonly used open space because she learned closed defecation from her previous area of residence); and in chapter 5.2 – discussing behaviour and consciousness, because the conscious mind is shaped through education/ learning experiences and impacts behaviour.

- **How are the locations and circumstances different in regards to sanitation access? Why?**

This question is indirectly answered in the findings and analysis chapter (4) as well as the discussions chapter (5), but a concrete summary is given in 4.2. (Field Study Context Findings), addressing the question. The locations differ in regards to sanitation access as some of the poorest settlers have access to a public toilet or need to defecate in the open depending on where they live and what the local arrangements are.

6.2.2 How Research Objectives Have Been Addressed

Listed are the five research objectives with a description of how and where they are addressed in the thesis.

- 1. Explore the notion of ‘self’, identity and agency, in particular with regards to a ‘best practice’ approach concerning sanitation development interventions.**

The first research objective has been addressed through the literature review in Chapter 2. Concepts surrounding the ‘technologies of the self’, identity and capabilities have been explored. The link to perceived ‘best practice’ of sanitation development interventions was established by discussing CLTS which highlights the importance of a behavioural training or ‘software’ component for the effectiveness of safe sanitation practice development. This was then also sought out through literature on the context of India specifically (Chapters 2.2.5 and 4.1). The ‘best practice’ in the context is identified as something similar to ‘Community Led Total Sanitation’ and the low cost dual pit latrine solution of Sulabh International, or sanitation technology promotion (hardware and software) of the NGO Gramalaya.

- 2. Probe into the sanitation situation of the marginalized poor households to find out if there is evidence for open defecation practiced within the Greater Chennai region**

This research objective was addressed through the fieldwork the findings of which specifically relating to this objective are documented in chapter 4.2. It has found that the sanitation situation of the marginalized poor is at times abysmal as settlers within the Greater Chennai region normally practice open defecation and frequently struggle with the need for privacy, hygiene and safety.

- 3. Get a picture of the subjective experience of settlers with regards to their sanitation option available, within their socio-political lifeworld dynamics, and highlight a multitude of realities.**

Chapter 4.3 documented the findings addressing this research objective with the accounts of settlers struggling to choose between sanitation options available, which depend on local arrangements such as

toilet for women only, or only available during daytime, and when there is none available the struggle to remain physically and mentally unharmed while using the toilet in the open, perhaps in full view of by-passers.

4. Examine the relationship between agency, consciousness, and mental endowments

This objective is addressed in Chapter 5.2. Cross-disciplinary research in particular neuroscientific findings allowed the study to examine the relationship between human agency and behaviour, the conscious mind and mental endowments, with the aim of highlighting the direct relationship between the 'lifeworld' and subjective realities of settlers and the limitations to psychological and agency freedoms induced by limiting physical and social conditions. This sought to evidence why participatory approaches, which allow for growth in terms of human consciousness and agency are the starting point for a sustainable development intervention to promote improved sanitation.

5. Explore what kind of sanitation development intervention would fit the subjective realities of settlers on the ground

The documentation addressing the fifth research objective are within chapter 5.3, with parts 5.3.1 and 5.3.2 analysing the subjective realities of settlers interviewed and their accounts of agency for sanitation, for instance the Total Sanitation campaign delivered by the Panchayat President in Mudichur, as well as accounts of their 'lifeworlds' analysed through an inquiry and mapping out of migration history and employment situation. Part 5.3.4 of the chapter discusses the possibilities and kinds of intervention in five different scenarios of open defecation and therefore also directly addresses the objective. Part 5.4 and 5.5 indirectly address the objective as they argue for a legislative and ontological repositioning of public policy.

6.3 Way Forward for the Research

The initial motivation of this research was stemming from the understanding that all human doings and states of beings are consequence of how the human conscious mind system is interacting with surrounding (internal and external) stimuli. We are indeed all created in an equal fashion but the conditions that impact and restrict individual development are weighing heavier on some than on others. An example of a heavy burden restricting human development and negatively impacting human health is the lack of adequate sanitation and hygiene facilities and practices. To argue the case this research thesis has combined field work findings illustrating a heavy psychological burden on people due to the necessity to practice open defecation with an exploration into conscious mind research. The investigation, at this stage, was of a normative nature, as it sought to connect consciousness research, which has a universal applicability, to the specifics of precarious environments and situations: here the practice of open defecation in dense urbanising environments.

From this there are two avenues forward for this research. The first avenue is to continue the exploration in the field of sanitation as a public good particularly within Indian cities. This could mean on the one hand deepening the research in Chennai, to help achieve the goal of an open defecation free city, and on the other broadening the scope of research to other Indian cities. This however would imply a better analysis of local conditions including an investigation into political dynamics from which the research has so far kept a fair bit of distance.

Some political themes have been mentioned, like the political technologies employed by slum settlers to access water⁶⁵, the discussion of the 'masculinities of public policy'⁶⁶, the policy efforts of the Indian government to achieve 'total sanitation'⁶⁷, how official urban development led

⁶⁵ See 2.1.1 (Political Technologies and Capabilities for Self-Security)

⁶⁶ See 2.1.2 (Masculinities of Public Policy)

⁶⁷ See 4.1 (Sanitation Projects in Rural and Urban India: Government Initiatives)

to 'Structural Violence'⁶⁸, and to some extent the discussion on 'Intellectual Altruism'⁶⁹. The reason why the research did not go into a thorough analysis of political themes and structures is because its analytical emphasis was on the human conscious mind system and mental freedoms to do and be – connecting this to local power dynamics and relevant politics would be a constitutive step.

Thus while one direction the research should take would be towards influencing and integrating sanitation poverty of urban India with an understanding of subjective realities within the political landscape and with the goal of targeted policy recommendations; the second avenue would be to extrapolate the contribution to theory (integration of capability approach with conscious mind system analysis) and show its applicability to different scenarios where human development is compromised. This means further that research assessing subjective realities facing sanitation poverty in the context of urbanising cities could be extended to other countries, just as this could be the case for the theoretical contribution.

6.4 Closing Remarks

Public health above all public policy is to be prioritized, to allow for a foundation of the wellbeing aspect of capabilities which greatly enhances people's agency capabilities. Advocating a rubric of intelligent altruism in a time where social liberal values and humanity is in danger of heightened animosities could perhaps not be more fitting. This is because in the advent of market-led development, altruism is actively and overtly advanced through non-governmental or faith based organisations (or philanthro-capitalists), and not a characteristic prevailing in public governance. The dimensions of compassion, care, fairness, recognition, social values and a 'reverence for life' in the words of E.F.Schumacher (1973), are dimensions neither to be found in non-feminist economics, nor in non-inclusive public policy. They are

⁶⁸ See 5.3.3 (Structural Violence)

⁶⁹ See 5.5 (Intellectual Altruism)

predominantly system 1 rooted behaviours: guided by intuitions acquired through upbringing, education, social learning, and thus more difficult to consciously access. Such dimensions can be grouped around the notion of altruism.

Altruism is not a behaviour taught through prescriptive means as this would lead to the principal-agent dilemma. Instead it is to be cultivated and nurtured 'intelligently' – through 'nudges' which guide but do not determine choice, in a manner that allows the agent to act deliberately, preserving the freedom of choice, as is a guiding principle of the capability approach. This leads either to positive affirmation or a learning experience, upon which future behaviour is based - as laid out with the conscious mind discussion.

The hope is that through providing an elaboration based in the 'natural scientific' exploration of consciousness (conjectural maybe, but convincing) of the importance of these 'social science', 'feminine' notions, actors in a market-led policy environment can reposition themselves onto a more human path and incorporate the principles and guidelines of humanity and altruism, previously reserved for non-governmental actors.

Bibliography

Agoramoorthy, G. and Hsu, M. J. (2009) India needs sanitation policy reform to enhance public health. *Journal of Economic Policy Reform* 12 (4), 333-342.

Alkire, S. (2002) *Valuing Freedoms - Sen's Capability Approach and Poverty Reduction*. Oxford: Oxford University Press.

Allen, A., Davila, J. D. and Hofmann, P. (2006) *Governance for Water and Sanitation Services for the Peri-urban Poor - A Framework for Understanding and Action in Metropolitan Regions*. London, dpu, DFID.

Amin, A. and Thrift, N. (2016) *Seeing like a City*. Cambridge: Polity.

Anand, N. (2011) PRESSURE: The PoliTechnics of Water Supply in Mumbai. *Cultural Anthropology* 26 (4), 542-564.

Anand, P. B. (2007) *Scarcity, Entitlements and the Economics of Water in Developing Countries*. New Horizons in Environmental Economics. Cheltenham: Edward Elgar.

Arnold, D. P. (2015) *Critical Theory*. International Encyclopedia of the Social & Behavioral Sciences 5 (2).

Arya, D. (2014) India gang rapes: Outrage over police 'discrimination'. BBC News. <http://www.bbc.co.uk/news/world-asia-india-27631241>
Accessed 28/11/2016.

Bandura, A. (1971) *Social Learning Theory*. New York: General Learning Press

Banerjee, A. V. and Duflo, E. (2012) *Poor Economics - Barefoot Hedge-fund Managers, DIY Doctors and the Surprising Truth about Life on Less Than \$1 a Day*. London: Penguin Books.

- Bertoldo, R. and Castro, P. (2016) The outer influence inside us: Exploring the relation between social and personal norms. *Resources, Conservation and Recycling* (112), 45-53.
- Berube, A., Trujillo, J. L., Ran, T. and Parilla, J. (2015) *Global Metro Monitor*. The Brookings Institution.
<http://www.brookings.edu/research/reports2/2015/01/22-global-metro-monitor> Accessed 14/05/2016.
- Bhatta, B. (2013) *Research Methods in Remote Sensing*. London: Springer.
- Bohman, J. (2016) *Critical Theory*. Stanford Encyclopedia of Philosophy. Fall 2016 edition.
<https://plato.stanford.edu/archives/fall2016/entries/critical-theory/>
 Accessed 20/09/2017.
- Bongartz, P., Vernon, N. and Fox, J. (2016) *Sustainable Sanitation for All. Experiences, challenges, and innovations*. Warwickshire: Practical Action.
- Brewster, M. M., Herrmann, T. M., Bleisch, B. and Pearl, R. (2006) A Gender Perspective on Water Resources and Sanitation. *Wagadu - A Journal of Transnational and Women's and Gender Studies* 3 (Spring).
- Brook, A. (2016) Kant's View of the Mind and Consciousness of Self. In Zalta, E. N. (editor) *The Stanford Encyclopedia of Philosophy*. Winter 2016 edition. Metaphysics Research Lab, Stanford University.
<https://plato.stanford.edu/entries/kant-mind/> Accessed 22/12/2017.
- Bryman, A. (2016) *Social Research Methods*. 5th edition. Oxford: Oxford University Press.
- Burkitt, I. (2002) Technologies of the Self: Habitus and Capacities. *Journal for the Theory of Social Behaviour* 32, 221-237.

- Chambers, R. (1992) Rural appraisal: rapid, relaxed and participatory. *IDS discussion paper* 311.
- Chambers, R. (1994) The origins and practice of participatory rural appraisal. *World Development* 22 (7), 953-969.
- Chambers, R. (2009) Going to Scale with Community-Led Total Sanitation: Reflections on Experience, Issues and Ways Forward. *IDS Practice Paper* 1.
- Chandrababul, D. (2015) Smart toilets in Chennai finally open to public. <http://timesofindia.indiatimes.com/city/chennai/Smart-toilets-in-Chennai-finally-open-to-public/articleshow/47669343.cms> Accessed 26/06/2017.
- Chandramouli, C. (2011) *Census of India: Availability and type of latrine facility: 2001-2011*.
http://censusindia.gov.in/2011census/hlo/Data_sheet/India/Latrine.pdf Accessed 14/05/2016.
- Chaplin, S. E. (2011) Indian cities, sanitation and the state: the politics of the failure to provide. *Environment & Urbanisation* 23 (1), 57-70.
- Cherukupalli, A. (2016) Open defecation in India: forcing people to stop is not the solution. *theguardian*, https://www.theguardian.com/global-development-professionals-network/2016/nov/18/open-defecation-india-solution-world-toilet-day?CMP=share_btn_link Accessed 25/11/2016
- Corburn, J. and Karanja, I. (2016) Informal settlements and a relational view of health in Nairobi, Kenya: sanitation, gender and dignity. *Health Promotion International* 31 (2), 258-269.
- Damasio, A. (1999) *The feeling of what happens - body, emotion and the making of consciousness*. New York: Harcourt Brace.

- Damasio, A. (2011) *The quest to understand consciousness*. TED-Talk. https://www.ted.com/talks/antonio_damasio_the_quest_to_understand_consciousness Accessed 3/05/2017.
- Devnarain, B. and Matthias, C. R. (2011) Poor access to water and sanitation: Consequences for girls at a rural school. *Agenda* 25 (2), 27-34.
- Dictionary, C. (2017) *Philosophy*. Cambridge University Press.
- Evans, B., Colin, C., Jones, H. and Robinson, A. (2009) *Sustainability and equity aspects of total sanitation programmes - A study of recent WaterAid supported programmes in three countries: global synthesis report*. WaterAid.
- FE Online (2016) PM Narendra Modi lauds states' efforts for 'Swachh Bharat Abhiyan'. *The Financial Express*, 3/11/2016, <http://www.financialexpress.com/india-news/pm-narendra-modi-lauds-states-efforts-for-swachh-bharat-abhiyan/437630/> Accessed 13/11/2016.
- Fennell, S. (2010) *Rules, Rubrics, and Riches. The interrelations between legal reform and international development*. Oxon: Routledge.
- Fennell, S. and Arnot, M. E. (2008) *Gender Education and Equality in a Global Context - Conceptual frameworks and policy perspectives*. Oxon: Routledge.
- Flyvbjerg, B. (2005) Social science that matters. *Foresight Europe*, 38-42.
- Frohlich, K. L., Corin, E. and Potvin, L. (2001) A theoretical proposal for the relationship between context and disease. *Sociology of Health & Illness* 23 (6), 776-797.
- Gaventa, J. (2011) *Foucault: power is everywhere*. Powercube - understanding power for social change: The Participation, Power and

Social Change team, Institute of Development Studies, University of Sussex. <https://www.powercube.net/other-forms-of-power/foucault-power-is-everywhere/> Accessed 23/05/2018. Giddens, A. (1979) *Central Problems in Social Theory - Action, Structure and Contradiction in Social Analysis*. California: University of California Press Berkeley and Los Angeles.

Gilbert, A. and Gugler, J. (1992) *Cities, Poverty and Development. Urbanization in the Third World*. Second edition. Oxford: Oxford University Press.

Google Maps. (2017) Map of fieldwork locations.
<https://www.google.co.in/maps/@13.0469818,80.1146648,12z>
Accessed 14/01/2017

Gopalakrishnan, S. (2014) Wonder Women of many Tamil Nadu Villages: Water and Sanitation Promoters.
<http://sanitation.indiawaterportal.org/english/node/2495> Accessed 15/08/2017.

Gramalaya (2013) *Gramalaya Tiruchirappalli*.
http://www.gramalaya.in/pdf/our_approch.pdf Accessed 17/06/2014.

Gramalaya (2016) *Gramalaya Tiruchirappalli*. <http://gramalaya.in/index.php>
Accessed 17/06/2014.

Harre, R. (2002) *cognitive science - a philosophical introduction*. London: Sage Publications.

Hawkins, P., Blackett, I. and Heymans, C. (2013) *Poor-Inclusive Urban Sanitation: An Overview*. Water and Sanitation Program.

Hodal, K. (2016) Nepal's bleeding shame: menstruating women banished to cattle sheds. *the guardian*. <https://www.theguardian.com/global-development/2015/dec/22/india-menstruation-periods-gaokor-women-isolated> Accessed 18/10/2017.

- How, A. (2003) *Critical Theory - Traditions in Social Theory*. Macmillan Education UK.
- HRW (2014) *Cleaning Human Waste - "Manual Scavenging," Caste and Discrimination in India*. USA: Human Rights Watch.
https://www.hrw.org/sites/default/files/reports/india0814_ForUpload_0.pdf Accessed 27/10/2017.
- Hueso, A. and Bell, B. (2013) An untold story of policy failure: The Total Sanitation Campaign in India. *Water Policy Uncorrected Proof*, 1-18.
- Kahneman, D. (2003) Maps of Bounded Rationality: Psychology for Behavioral Economics. *The American Economic Review* 93 (5), 1449-1475.
- Kahneman, D. (2011) *Thinking, fast and slow*. London: Penguin Group.
- Kant, I. (1781) *Critique of pure reason*. Trans. Guyer, P. and Wood, A. (1998) Cambridge, UK: Cambridge University Press.
- Kaur, G. (2015) Banished for menstruating: the Indian women isolated while they bleed. *the guardian*. <https://www.theguardian.com/global-development/2015/dec/22/india-menstruation-periods-gaokor-women-isolated> Accessed 18/10/2017.
- Lichtman, M. (2014) *Qualitative Research for the Social Sciences*. Thousand Oaks, Sage.
- Lizardo, O. (2010) Beyond the antinomies of structure: Levi-Strauss, Giddens, Bourdieu, and Sewell. *Theory and Society* 39 (6), 651-688.
- Loewald, H. W. (1980) *Papers on Psychoanalysis*. Yale University Press.
- Madhavan, D. (2008) TO FACILITATE TOTAL SANITATION - TN stands second in bagging village sanitation awards. *The Times Of India Chennai*, sec. Times Region, 6.

- Mahon, T. and Fernandes, M. (2010) Menstrual hygiene in South Asia: a neglected issue for WASH (water, sanitation and hygiene) programmes. *Gender & Development* 18 (1), 99-113.
- Manikandan, K. (2016) Sanitation around Chennai Central takes a beating. *The Hindu*, 13/1/2016, <http://www.thehindu.com/news/cities/chennai/Sanitation-around-Chennai-Central-takes-a-beating/article13996285.ece> Accessed 27/06/2017.
- Mara, D., Lane, J., Scott, B. and Trouba, D. (2010) Sanitation and Health. *PLOS Medicine* 7 (11), e1000363.
- McFarlane, C. (2007) Sanitation in Mumbai's informal settlements: state, 'slum', and infrastructure. *Environment and Planning* 40, 88-107.
- McFarlane, C. and Silver, J. (2016) The Political City: "Seeing Sanitation" and Making the Urban Political in Cape Town. *Antipode* 49 (1), 125-148.
- McLeod, S. (2017) *Maslow's Hierarchy of Needs*. <https://www.simplypsychology.org/maslow.html> Accessed 04/05/2017.
- Montañez, A. (2017) This is your brain on poverty - Data visualizations highlight the surprising connections between income and brain structure. *Scientific American*, <https://blogs.scientificamerican.com/sa-visual/this-is-your-brain-on-poverty/> Accessed 15/09/2017.
- Murphy, H. M., McBean, E. A. and Farahbakhsh, K. (2009) Appropriate technology—A comprehensive approach for water and sanitation in the developing world. *Technology in Society* 31 (2), 158-167.
- Nalty, M. (2013) Retrenchment Grief. *Australian Law Librarian* 21 (1), 44-49.
- Narain, S. (2012) Sanitation for all. *Nature* 486 (185).

- NIE (2014) State Ranks Second in Industrial Growth. *The New Indian Express*, http://www.newindianexpress.com/states/tamil_nadu/State-Ranks-Second-in-Industrial-Growth/2014/12/06/article2557891.ece Accessed 9/09/2016.
- Ogata, S. and Sen, A. (2003) *Human Security Now*. New York: Commission on Human Security.
- Padmanabhan, K. (2017) Authorities lock bio-toilet, people 'launch' open toilet. *The Hindu*, 16/06/2017, <http://www.thehindu.com/news/cities/chennai/authorities-lock-bio-toilets-people-launch-open-toilet/article19088326.ece> Accessed 26/06/2017
- Pickett Kate and Richard, W. (2010) *The Spirit Level: Why Equality is Better for Everyone*. London: Bloomsbury Press.
- Poorvaja, S. (2016) Improving Sanitation through technology. *The Hindu*, 03/03/2016, <http://www.thehindu.com/news/cities/chennai/improving-sanitation-through-technology/article8307459.ece> Accessed 15/08/2017.
- Practical Action (2016) *Micro-hydro power*. <https://practicalaction.org/micro-hydro-power> Accessed 28/11/16.
- Ray, L. (2015) Critical Theory: Contemporary. In Wright, J. D. (editor) *International Encyclopedia of the Social & Behavioral Sciences*. Vol. 5. 2 edition. Oxford: Elsevier. 304–310.
- Roy, S. (1989) *The Barefoot Book - economically appropriate services for the rural poor*. (Ed.) London: Intermediate Technology Publications.
- Rylko-Bauer, B. and Farmer, P. (2016) Structural Violence, Poverty, and Social Suffering. In Brady, D. and Burton, L. M. (editors) *The Oxford Handbook of the Social Science of Poverty*. OXFORD HANDBOOKS ONLINE: Oxford University Press.

- Sahoo, K. C., Hulland, K. R., Caruso, B. A., Swain, R., Freeman, M. C., Panigrahi, P. and Dreibelbis, R. (2015) Sanitation-related psychosocial stress: A grounded theory study of women across the life-course in Odisha, India. *Soc Sci Med* 139, 80-9.
- Samson, A. (2014) *The Behavioral Economics Guide 2014 (with a foreword by George Loewenstein and Rory Sutherland)* <http://www.behavioraleconomics.com> Accessed 15/08/2017.
- Satish, S. (2017) *State Sanitation Strategy*. SSWM - sustainable sanitation and water management. <https://www.sswm.info/content/state-sanitation-strategy> Accessed 27/10/2017.
- Saunders, M., Lewis, P. and Thornhill, A. (2009) *Research Methods for Business Students*. Harlow: Pearson Education Ltd.
- Schmidt, C. W. (2014) Beyond Malnutrition: The Role of Sanitation in Stunted Growth. *Environmental Health Perspectives* 122 (11), A298-A303.
- Schumacher, E. F. (1973) *Small is beautiful - a study of economics as if people mattered*. London: Vintage.
- Sekar, S. P. and Kanchanamala, S. (2011) An Analysis of Growth Dynamics in Chennai Metropolitan Area. *Institute of Town Planners, India Journal* 8(4), 31-57.
- Sen, A. (1992) *Inequality Reexamined*. Oxford: Clarendon Press.
- Sen, A. (1999) *Development as Freedom*. Oxford: Oxford University Press.
- Sethuraman, S. (2012) *Urban Sanitation In Tamil Nadu: A Report On Public Conveniences*. Transparent Chennai. [http://www.transparentchennai.com/wp-content/uploads/downloads/2013/07/URBAN SANITATION IN TAMIL](http://www.transparentchennai.com/wp-content/uploads/downloads/2013/07/URBAN_SANITATION_IN_TAMIL)

NADU A REPORT ON PUBLIC CONVENIENCES.pdf_ Accessed 28/11/2016.

Senthalir, S. (2017) Manual scavenging: an indelible blot on urban life. *The Hindu*, <http://www.thehindu.com/news/national/tamil-nadu/an-indelible-blot-on-urban-life/article17664714.ece> Accessed 02/02/2018.

Sharma, D. C. (2015) India's BJP Government and health: 1 year on. *The Lancet* 385 (9982), 2031 - 2032.

Smith, D. W. (2013) Phenomenology. Stanford Encyclopedia of Philosophy. <https://plato.stanford.edu/entries/phenomenology/> Accessed 12/02/2018.

Solms, M. and Panksepp, J. (2012) The "Id" Knows more than the "Ego" Admits: Neuropsychanalytic and Primal Consciousness Perspectives on the Interface Between Affective and Cognitive Neuroscience. *brain sciences* 2, 147-175.

Spears, D. (2012) *Policy Lessons from implementing India's Total Sanitation Campaign*. India Policy Forum 2012.

Spears, D., Ghosh, A. and Cumming, O. (2013) Open Defecation and Childhood Stunting in India: An Ecological Analysis of New Data from 112 Districts. *PLOS ONE* 8 (9), e73784.

Sreevatsan, A. (2016) India's sanitation campaigns have cost 40 times Mars mission budget. *The Hindu*, 8/10/2014, <http://www.thehindu.com/news/national/costly-sanitation-campaigns-but-very-little-to-show-for-it/article6479587.ece> Accessed 27/10/2017.

Stalin, J. S. D. (2016) Welcome Chennai's New 'Always Clean' E-Toilets. *NDTV*, 1/03/2016, <https://www.ndtv.com/chennai-news/welcome-chennais-new-always-clean-e-toilets-1282650> Accessed 23/12/2017.

- Steele, C.M., Spencer, S.J. and Lynch, M. (1993) Self-Image Resilience and Dissonance: The Role of Affirmational Resources. *Journal of Personality and Social Psychology* 64 (6), 885-896.
- Subbaraman, R., Nolan, L., Shitole, T., Sawant, K., Shitole, S., Sood, K., Nanarkar, M., Ghannam, J., Betancourt, T. S., Bloom, D. E. and Patil-Deshmukh, A. (2014) The psychological toll of slum living in Mumbai, India: A mixed methods study. *Social Science and Medicine* 119, 155-169.
- Tewari, S. (2015) Paid to poo: Combating open defecation in India. *BBC News*, 30/08/2015, <http://www.bbc.co.uk/news/health-33980904> Accessed 6/12/2017.
- Thagard, P. (2014) *Cognitive Science*. Stanford Encyclopedia of Philosophy. <https://plato.stanford.edu/entries/cognitive-science/> - CriCogSci Accessed 23/08/2017.
- The Economist (2014) Sanitation in India, The final frontier. *The Economist*, <https://www.economist.com/news/asia/21607837-fixing-dreadful-sanitation-india-requires-not-just-building-lavatories-also-changing-print> Accessed 14/05/2016.
- The Hindu (2014) Total sanitation: change in mindset will usher in the desired results. *The Hindu*, 26/02/2014, <http://www.thehindu.com/todays-paper/tp-national/tp-tamilnadu/total-sanitation-change-in-mindset-will-usher-in-the-desired-results/article5727864.ece> Accessed 15/11/2016
- Turner, J. F. C. and Fichter, R. (1972) *Freedom to Build*. New York: The MacMillan Company.
- UN (2010) *General Assembly Adopts Resolution Recognizing Access to Clean Water, Sanitation as Human Right, by Recorded Vote of 122 in Favour, None against, 41 Abstentions*. 28/06/2010, <http://www.un.org/press/en/2010/ga10967.doc.htm> Accessed 27/10/2017.

UNDESA. (2010) *Resolution adopted by the General Assembly on 28 July 2010 - 64/292. The human right to water and sanitation*. United Nations Department on Economic and Social Affairs.
<http://www.un.org/es/comun/docs/?symbol=A/RES/64/292&lang=E>
Accessed 27/10/2017.

UNeOD *United Nations, End Open Defecation*.
<http://www.un.org/millenniumgoals/endopendefecation.shtml> Accessed 11/06/2014.

UNMDG (2013) *United Nations Millennium Development Goals*.
<http://www.un.org/millenniumgoals/envIRON.shtml> Accessed 11/06/14.

Unterhalter, E. (2003) Education, capabilities and social justice - Background paper. [Paper commissioned for the EFA Global Monitoring Report 2003/4, The Leap to Equality].
<http://unesdoc.unesco.org/images/0014/001469/146971e.pdf>
Accessed 30/05/2016

Vasundara, R. (2012) 45% in Tamil Nadu defecate in open. *The Times of India*. 15/03/2012, <http://timesofindia.indiatimes.com/city/chennai/45-in-Tamil-Nadu-defecate-in-open/articleshow/12270684.cms> Accessed 14/05/2016

WASH-United (2015) *United Nations General Assembly affirms that water and sanitation are distinct rights and confirms a strong definition of these rights*. Wash United gGMBH. <http://www.wash-united.org/files/resources/UNGA70 - Res on WASH - Joint NGO statement 17 Dec 2015.pdf> Accessed 27/10/2017.

WHO&UNICEF (2017) *Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines*.
http://www.who.int/water_sanitation_health/publications/jmp-2017/en/
Accessed 5/09/2017.

World Bank (2010) *Main report. Water and sanitation program*. Washington, DC: World Bank.
<http://documents.worldbank.org/curated/en/630981468041475311/Main-report> Accessed 28/11/2016.

WorldBank (2017) *GDP growth (annual %) - World Bank national accounts data, and OECD National Accounts data files*.
<https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=IN> Accessed 10/10/2017.

WSSCC (2004) *Listening – To those working with communities in Africa, Asia, and Latin America to achieve the UN goals for water and sanitation*. WSSCC. http://wsscc.org/wp-content/uploads/2016/01/Listening_WSSCC_2004.pdf Accessed 18/12/2017.

WSSCC & FANSA (2015) *Leave No One Behind - Voices of Women, Adolescent Girls, Elderly and Disabled People, and Sanitation Workers*. WSSCC & Freshwater Action Network South Asia (FANSA).
<http://wsscc.org/resources-feed/leave-no-one-behind-voices-of-women-adolescent-girls-elderly-persons-with-disabilities-and-sanitation-workforce/> Accessed 01/02/2016

Appendix 1

Overview of places visited:

26. 2. 2016 – Sriperumbudur – Vayalur (exploratory trip)

28. 2. 2016 – Sriperumbudur - Navalur (1)

29. 2. 2016 – Perungudi Medu - Kallukuttai

01. 3. 2016 – Neelam Basha Dargah (Lighthouse MRTS) (1)

07. 3. 2016 – Neelam Basha Dargah (2)

11. 3. 2016 – Sriperumbudur informal roadside settlements (1)

12. 3. 2016 – Mudichur (1)

13. 3. 2016 – Mudichur (2)

14. 3. 2016 – Kottivakkam (1)

15. 3. 2016 – Alandur (1)

18. 3. 2016 – Madipakkam

19. 3. 2016 – Tondiarpet (Kasimedu Kuppan)

20. 3. 2016 – Sriperumbudur Navalur (2) +informal roadside settlements (2)

21. 3. 2016 – Thoraipakkam/Pallikaranai (next to 109 Highway)

22. 3. 2016 – Kottivakkam (2)

30. 3. 2016 – Alandur (2) + councillors Thoraipakkam/Alandur/ Royapuram (Tondiarpet)

Appendix 2

Interview guide

Target groups:	General info of participant:
- women and adolescent girls	gender
- the elderly and people with disabilities	age
- sanitation workers and waste collectors	marital status
- transgender, fisher folk, plantation workers	children
	professions in the household

Questions about migration status

Since when do you live in this area?

I was born in this area	I migrated
<ul style="list-style-type: none"> - Have you changed your income earning activity in recent times? Why? - How far do you have to travel to your job? - Do you own the land you live on? When did you buy/rent it? - Do many new people move into this area? - Do you have access to water? Where does it come from? - How is waste managed here? 	<ul style="list-style-type: none"> - Where are you from originally? - Why did you move? - How do you find living here compared to before? Why? - Have you changed your income earning activity in recent times? Why? - How far do you have to travel to your job? - Do you own the land you live on? When did you buy/rent it? - Do many new people move into this area? - Do you have access to water? Where does it come from? How is waste managed here?

- Do you feel you are part of the society& socially accepted?
- How important is it to have access to a toilet?

Questions about sanitation facilities

Defecation is something every person has to deal with on a daily basis. This study is to assess the difficulty some people might have to care for personal hygiene and needs.

What toilet facilities are available?

Private toilet	Shared toilet	Public toilet	No toilet
- do you have access to water?	- how many ppl?	- Where is it?	- where do you go?
	- Cleanliness?	- Cleanliness?	- Cleanliness?
- Electricity/light?	- Convenience?	- Convenience?	- Convenience?
	- Safety?	- Safety?	- Safety?
- Convenience (structure)	- sense of privacy?	- sense of privacy?	- sense of privacy?
	- control over personal space and needs?	- control over personal space and needs?	- control over personal space and needs?
	- special needs?	- special needs?	- special needs?

- Does the access to a toilet impact personal wellbeing? How?
- Do you know of any NGO promoting sanitation facilities or giving behavioural advice in regards to defecation?
- What does the government do in this regard?

Appendix 3

Overview table of interviewee characteristics

This table provides an overview of the slum settlers interviewed, divided into the characteristics of gender, origin, age and jobs. Excluded from this are the Councillors or Village administrator that have been spoken to, because they have been asked about the locality not their personal circumstances.

Fishing harbour (Kasimedu Kuppam)

Respondent	Gender	Origin	Age	Job
FH-HH1	Female	Lived here since childhood	48	Street seller
FH-HH2	Female	Pulicat (~50 km away), moved here 3 years ago	23	Housewife
FH-HH3	Female	Kalamandapam (3km away), living here since about 48 years	74	Former maidservant, now sowing
FH-HH4	Female	Born in Sivakasi (8h South), here since about 26 years	38	Housewife/ maidservant
FH-HH5	Female	From Kasimedu Kuppam, lived in resettlement area since 3 years	44	Selling vegetables
FH-HH6	Female	From Masthan temple area, Tondiarpet (Chennai neighbourhood), moved 6 years ago	68	Small stall vendor

Lighthouse MRTS station (Nadukuppam/Neelam Basha Dargah)

Respondent	Gender	Origin	Age	Job
LH-HH1a	Male	Born in the area	27	Fisherman
LH-HH2	Female	Lives here since 35 years, comes from vicinity	45	Housewife/ voluntarily cleaning public toilet
LH-HH3	Female	Born in the area	42	Sells fish
LH-HH4	Female	n/a	70	n/a
LH-HH5	Male	Born in the area	44	Cutting fish
LH-HH1b	Female	Living here all her life	75	n/a
LH-HH6	Female	Born in the area	55	Teashop

				owner
LH-HH7	Female	Born in the area	45	Small food stall
LH-HH8	Female	Living here since 20 years, born in vicinity	52	No fixed employment, on demand cleaner
LH-HH9	Female	Birthplace around 10km away, living here since 35 years	50	Sells fish

Kottivakkam

Respondent	Gender	Origin	Age	Job
KV-HH1	Female	Karnatur (3 hours away)	34	Sells fish
KV-HH2	Female	Moved from Thiruvannamiyur (3 km away), 3 1/2 years ago	27	Housewife
KV-HH3	Female	Lives here since 30 years, moved from Adyar	57	Housewife
KV-I4	Male	Lives in Semmencherry (20 km away), works for corporation, born in Triplicane, moved to Semmencherry when married	60	Waste picker
KV-HH5	Male	Moved from Royapuram (central north part of Chennai) 40 years ago	65	Fisherman
KV-HH6	Male	Moved from Karaikudi (400km away), 15 years ago	70	Retired carpenter
KV-HH7	Female	From Karnatur (30 min away), moved here 15 years ago	35	Sells fish
KV-HH8	Female	Born and raised here, moved to husband's place (Madurantakam, 3 hours away) but returned as facilities are better here	28	Sells fish

Perungudi Medu, Kallu Kuttai Lake

Respondent	Gender	Origin	Age	Job
PM-HH1	Female	Living here since 1 year, moved from Murdukudai district	26	Teacher/presently staying at home, child

				rearing
PM-HH2	Female	“came here at 15, left for home in Kanchipuram for 4 years, ... came back to Chennai because married to husband”	30	Housewife
PM-HH3	Female	Living here for 4 years, moved from Mylapore (area in central south Chennai)	42	House cleaner on call
PM-HH4	Female	Originally from KK Nagar, (20 km away)	70	Retired, did household work
PM-HH5	Male	Lived in the Taramani area (20 min away) before. Moved here 20 years ago.	43	Social worker/ human rights and anti-corruption bureau

Alandur

Respondent	Gender	Origin	Age	Job
AL-HH1	Female	Born in the area	40	Housewife
AL-HH2	Male	Born in the area	About 40 ⁷⁰	Works at butcher shop
AL-HH3	Female	Born in the area	30	Owns small stall selling food stuff, grocery
AL-HH4	Female	Born in the area	50	Until 5 years ago employment in leather company, now housewife
AL-HH5	Female	Born in the area	40	Housewife

Madipakkam

Respondent	Gender	Origin	Age	Job
MA-HH1	Female	Moved here from Mylapore 24 years ago	About 60 ⁷¹	Retired maid servant
MA-HH2	Female	Lives here since 14 years, from Arany (ca.	About 40 ⁷²	Street sweeper Chennai

⁷⁰ Interview started with daughter but as she is not living here but merely visiting, the focus of the interview was on her father who was not asked for his age

⁷¹ Interviewee did not remember her age

		150 km away)		corporation
MA-HH3	Female	Born and raised in Adyar, married to Mylapore, relocated her 20 years ago	45	Housewife
MA-HH4	Female	Lives here since 18 years, from Adyar	44	Tailor
MA-HH5	Male	Moved here 38 years ago from Mylapore	68	Retired watchman for a house

Thoraipakkam

Respondent	Gender	Origin	Age	Job
TH-HH1	Female	Born in the area	32	Housewife
TH-HH2	Female	Tiruvannamalai, pretty far, down south. Living here since marriage, 7 years ago	28	Maid servant
TH-HH3	Female	Born in Aruppukkottai, moved for work opportunities, 18 years ago	60	Retired maid servant
TH-HH4	Female	Lives here since 15 years, moved from Cheyal, 3h away, for job opportunities	34	Tailor

Mudichur

Respondent	Gender	Origin	Age	Job
MU-HH1	Female	Living here 14-15 years, from Tambaram (7km away)	48/30 ⁷³	Housekeeping/selling snacks at toll station
MU-HH2	Female	From Chengalore (10-15km away), lives here about 50 years	70	Retired agricultural field worker
MU-HH3	Female	Kovilambakkam (30 km South), married to Tambaram, moved here 4 years ago	45	Non-contract construction worker
MU-HH4	Female	Came here since 24 years from Tambaram, lived there 5 years,	56	Maid servant

⁷² Interview process started with daughter but as she was under age, the interview was conducted with the mother, however her age was not asked.

⁷³ Interview process started with one but ended up involving 2 women, mother and daughter

		originally from Pondicherry		
MU-HH5	male	Living here 12-13 years, from Saidapet, originally from southern Tamil Nadu	66	Polishes vessels

Sriperumbudur Village

Respondent	Gender	Origin	Age	Job
SN-HH1	Male	Born in the area	43	Housekeeping assistant
SN-HH2	Female	Born in area	31	Company housekeeper
SN-HH3	Female	Born in area	40	Industrial housekeeping
SN-HH4	Male	Born in the area	30	Factory assembly line operator
SN-HH5	Male	Born in the area	18-20 ⁷⁴	Store loader
SN-HH6	Male	Tuticorin (overnight journey from here), in area since 3 months	45	English Professor
SN-HH7	Male	Born in area	38	Electrician and plumber
SN-HH8	Male	n/a	68	Former councillor, now in real estates

Sriperumbudur Roadside

Respondent	Gender	Origin	Age	Job
SR-HH1	Female Male Female	Southern Tamil Nadu, 500 km away, here since 10 years (father of respondent) (mother of respondent)	29 53 40 ⁷⁵	Housewife Owner of tea stall
SR-HH2	Female	Thiruvallur district, here since 15 years because of employment opportunities	33	Housewife
SR-HH3	Male	Kancheepuram, living	28	Auto driver/

⁷⁴ Interviewee was not asked for age as he was one of the bystanders during a previous interview, yet he was very keen to contribute.

⁷⁵ The respondent was joined by her parents during the interview process. It appears that her mother's age is an estimate

		here since 20 years		food stall
SR-HH4	Male	Born in area	21	Technician of local distillery
	Male	(Parents of respondent stated to be living here over 18 years, mother is from Sriperumbudur)	46	Plumber
	Female		42	housewife